

**EPA Superfund  
Record of Decision:**

**FISHER-CALO  
EPA ID: IND074315896  
OU 01  
LA PORTE, IN  
08/07/1990**

- ! INSTALLATION OF SECURITY FENCES AROUND THE ONE-LINE ROAD PROPERTY AND THE NATIONAL PACKAGING PROPERTY AND AN UPGRADED SECURITY FENCE AROUND THE TWO-LINE ROAD PROPERTY (SEE FIGURE).
- ! EXCAVATION AND INCINERATION OF SOILS CONTAINING SEMIVOLATILES AND PCBS ABOVE ESTABLISHED CLEANUP LEVELS.
- ! SOIL FLUSHING OR, IF PROVEN EFFECTIVE, SOIL VAPOR EXTRACTION FOR VOLATILE ORGANIC COMPOUND (VOC)-CONTAMINATED SOILS WHICH REMAIN AFTER EXCAVATION. THESE SOILS WOULD BE TREATED UNTIL LEVELS OF VOCs IN SOILS ARE ACHIEVED THAT WOULD ALLOW ATTAINMENT OF ESTABLISHED GROUND WATER CLEANUP LEVELS.
- ! TCLP AND EP TOXICITY TESTS ON THE INCINERATION ASH RESIDUE TO DETERMINE IF THE UNTREATED ASH MAY BE DISPOSED OF ONSITE. IF THE ASH PASSES THE TCLP AND EP TOXICITY TESTS, IT MAY BE COMPACTED AND PLACED BACK ONSITE TO FILL EXCAVATION AREAS; IF THE ASH DOES NOT PASS THE TCLP AND EP TOXICITY TESTS, IT WILL BE PLACED IN A RCRA-COMPLIANT HAZARDOUS WASTE LANDFILL.
- ! THE INSTALLATION OF EXTRACTION WELLS TO EXTRACT ALL CONTAMINATED GROUNDWATER. FOLLOWING EXTRACTION, THE CONTAMINATED GROUNDWATER WILL BE PUMPED THROUGH A PIPE NETWORK TO A GROUNDWATER TREATMENT FACILITY. THE TREATMENT SYSTEM WILL CONSIST OF AN EQUALIZATION/SEDIMENTATION BASIN, AN AIR STRIPPER TOWER, AND A GAC COLUMN. FOLLOWING TREATMENT, WATER WILL BE REINJECTED INTO THE UNDERLYING SHALLOW AQUIFER TO FLUSH CONTAMINANTS FROM THE SOIL AS WELL AS THE GROUND WATER.
- ! THE INSTALLATION OF AN ADDITIONAL MONITORING WELL SYSTEM TO DETERMINE THE EFFECTIVENESS OF THE REMEDY. AN ASSOCIATED CONTINGENCY PLAN WILL BE DEVELOPED TO PROVIDE FURTHER REMEDIAL ACTION IN THE EVENT THAT THE EXTRACTION WELLS ARE NOT EFFECTIVE IN CONTAINING THE CONTAMINATED PLUMES, OR IN THE EVENT THAT DRINKING WATER OR HEALTH-BASED STANDARDS FOR ANY CONTAMINANT ARE EXCEEDED IN THE FUTURE.
- ! A NEW PRODUCTION WELL CAPABLE OF PRODUCING AT LEAST 500 GALLONS PER MINUTE. THIS WELL IS NEEDED TO REPLACE THE CAPACITY OF AN EXISTING PRODUCTION WELL (WELL A) PREVIOUSLY CLOSED DUE TO CONTAMINATION.
- ! AN ASBESTOS ASSESSMENT AND LIMITED ASBESTOS REMOVAL/REPAIR OF EXISTING STRUCTURES. ALL TRANSITE PANELS, INTACT THERMAL INSULATION, AND OTHER ASBESTOS CONTAINING MATERIALS ON BUILDING EXTERIORS WOULD BE ENCAPSULATED. UNDER AN ASBESTOS MANAGEMENT PROGRAM, ALL FRIABLE, DAMAGED ASBESTOS CONTAINING MATERIAL (ACM) WHICH IS LOCATED OUTSIDE OF SITE BUILDINGS WOULD BE DISPOSED OF IN AN ACTIVE WASTE DISPOSAL SITE IN ACCORDANCE WITH NESHAPS 40 CFR 61.156.
- ! A BURIED DRUM INVESTIGATION IN TWO AREAS ON THE KIDP AND SPACE LEASING PROPERTY WHERE DRUMS AND/OR CONTAINERS MAY HAVE COME TO BE LOCATED. SOIL GAS SURVEYS AND TEST PITS SHALL BE IMPLEMENTED IN THESE AREAS TO IDENTIFY POTENTIAL ORGANIC CONTAMINATION. ALL DRUMS, CONTAINERS, CONTAINER CONTENTS AND CONTAMINATED SOILS IN THE AREAS WILL BE PROPERLY DISPOSED.
- ! SCOPING AND REMOVAL, IF NECESSARY, OF DRUMS, TANKS AND CONTAINERS LOCATED AT THE ONE-LINE ROAD PROPERTY AND IMMEDIATELY SOUTH OF THE NATIONAL PACKAGING BUILDING.

#### DECLARATION OF STATUTORY DETERMINATIONS

THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COMPLIES WITH FEDERAL AND STATE REQUIREMENTS THAT ARE LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE TO THE REMEDIAL ACTION, AND IS COST-EFFECTIVE. THIS REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, AND IT SATISFIES THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT REDUCE TOXICITY, MOBILITY, OR VOLUME AS THEIR PRINCIPAL ELEMENT.

CONSISTENT WITH SECTION 121C OF CERCLA, A REVIEW WILL BE CONDUCTED EVERY FIVE YEARS AFTER COMMENCEMENT OF REMEDIAL ACTION TO ENSURE THAT THE REMEDY CONTINUES TO PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT.

DATE 08/07/90

VALDAS V. ADAMKUS  
REGIONAL ADMINISTRATOR  
REGION V

#SB

#### **SITE BACKGROUND**

THE FISHER-CALO SITE IS LOCATED IN THE KINGSBURY INDUSTRIAL DEVELOPMENT PARK (KIDP) IN LAPORTE COUNTY, INDIANA. THE LOCATION OF THE SITE IS SHOWN IN FIGURE 1. THE KIDP IS LOCATED IN THE SOUTHEAST SECTION OF LAPORTE COUNTY, APPROXIMATELY 12 MILES SOUTHEAST OF LAPORTE, INDIANA. THE COMMUNITIES OF KINGSBURY, 1.9 MILES TO THE NORTHWEST, AND KINGSFORD HEIGHTS, 1.6 MILES TO THE SOUTHWEST, ARE THE MAJOR POPULATION CENTERS LOCATED NEAR THE SITE.

THE FISHER-CALO SITE IS COMPRISED OF THREE FACILITIES: THE ONE-LINE ROAD FACILITY (NOW CARDINAL CHEMICAL), THE TWO-LINE ROAD FACILITY, AND THE SPACE LEASING FACILITY AS SHOWN IN FIGURE 2. THE FISHER-CALO ONE-LINE ROAD FACILITY IS APPROXIMATELY THIRTY-THREE ACRES IN SIZE AND IS BORDERED TO THE NORTH AND SOUTH BY GRASSLANDS AND BUILDINGS. THE AREA WEST OF THE ONE-LINE FACILITY CONTAINS SCATTERED WOODLANDS AND FIELDS. TRAVIS DITCH AND KINGSBURY CREEK PARALLEL THE WESTERN BORDER OF THE FACILITY.

THE TWO-LINE ROAD FACILITY IS APPROXIMATELY 240 ACRES IN SIZE AND IS SITUATED IN SURROUNDINGS SIMILAR TO THE ONE-LINE FACILITY. THE LAND BETWEEN THE ONE-LINE FACILITY AND TWO-LINE FACILITY, AS WELL AS ALONG THE EASTERN AND SOUTHERN SIDE OF THE TWO-LINE FACILITY, IS UNDER CULTIVATION WITH CORN OR SOYBEANS. THE AREA NORTH OF THE TWO-LINE FACILITY AND ACROSS HUPP ROAD (THE MAIN ROAD IN AND OUT OF THE COMPLEX) WAS THE SITE OF MUNITIONS BUNKERS AND IS BASICALLY GRASSLAND WITH THE AFOREMENTIONED BUNKERS SPACED THROUGHOUT THE AREA. TO THE SOUTH OF THE FACILITY, THE LAND CONSISTS OF SCATTERED WOODLANDS AND GRASSLAND. AT THE SOUTHEAST CORNER OF THE TWO-LINE ROAD FACILITY IS A WETLAND AREA.

THE SPACE LEASING FACILITY IS APPROXIMATELY 170 ACRES IN SIZE AND IS SURROUNDED BY MUNITIONS BUNKERS TO THE WEST, CROPLAND TO THE NORTH AND SOUTH. TO THE EAST OF SPACE LEASING, AT THE END OF HUPP ROAD AND APPROXIMATELY 15,000 FEET FROM THE ONE-LINE ROAD, IS THE KINGSBURY FISH AND WILDLIFE AREA OPERATED BY THE INDIANA DEPARTMENT OF NATURAL RESOURCES.

A NUMBER OF PRIVATE WELLS ARE LOCATED AT OR NEAR THE FISHER-CALO SITE. THREE PRODUCTION WELLS ARE LOCATED ON THE SITE PROPER AND SEVERAL RESIDENTIAL AND MUNICIPAL WELLS ARE INSTALLED WEST AND SOUTHWEST OF THE SITE (SEE FIGURE 3).

#SHE

#### **SITE HISTORY AND ENFORCEMENT ACTIVITIES**

FISHER-CALO WAS PRIMARILY INVOLVED IN THE PACKAGING, STORAGE, AND DISTRIBUTION OF INDUSTRIAL CHEMICALS AS WELL AS THE RECLAMATION OF WASTE PAINT AND METAL FINISHING SOLVENTS. MIDWEST CHLORINE AND MIDWEST AMMONIA, WHICH SHARED THE ONE-LINE FACILITY, WERE INVOLVED IN THE PRODUCTION OF SODIUM HYPOCHLORITE AND THE PACKAGING OF LIQUID CHLORINE, ANHYDROUS AMMONIA, SULFUR DIOXIDE, ANHYDROUS HYDROGEN CHLORIDE, AND METHYLENE CHLORIDE FOR SALE TO COMMERCIAL USERS OF THESE MATERIALS.

IN 1970, MIDWEST CHLORINE CORPORATION BEGAN OPERATIONS AT THE ONE-LINE FACILITY. AT THIS TIME, THE DISPOSAL OF SOLID WASTE AND LIQUID WASTE AT THE SITE BEGAN. IN 1972, MIDWEST AMMONIA CORPORATION AND FISHER-CALO CHEMICAL SOLVENTS, INCORPORATED BEGAN SOLVENT RECLAMATION OPERATIONS AT THE ONE-LINE FACILITY. DRUMS CONTAINING STILL-BOTTOM WASTES WERE PRIMARILY STORED AT THE ONE-LINE FACILITY. HOWEVER, BY 1973, DRUM STORAGE, DISPOSAL AND BURIAL ACTIVITIES WERE OCCURRING AT SPACE LEASING COMPANY. FISHER-CALO CHEMICAL AND SOLVENTS, INCORPORATED HAD ALSO COMMENCED CHEMICAL PROCESSING ACTIVITIES IN THE BUILDINGS AT THE SOUTHERN SECTION OF THE TWO-LINE FACILITY. IN 1978, FISHER-CALO WAS FORMED THROUGH THE MERGER OF FISHER-CALO CHEMICAL AND SOLVENTS, INCORPORATED, MIDWEST AMMONIA CORPORATION, MIDWEST CHLORINE CORPORATION, AND WALLACE WAREHOUSE.

THROUGHOUT THE HISTORY OF THESE FIRMS AT THE ONE-LINE AND THE TWO-LINE FACILITIES, THERE HAVE BEEN NUMEROUS INSPECTIONS OF THE OPERATIONS BY THE STATE OF INDIANA AND OTHER REGULATORY AGENCIES. NUMEROUS VIOLATIONS OF ENVIRONMENTAL REGULATIONS WERE DOCUMENTED DURING THESE INSPECTIONS. IN ADDITION, THE FOLLOWING ACTIONS OCCURRED AS A RESULT OF REGULATORY INSPECTIONS.

IN JUNE 1979, THE INDIANA STATE BOARD OF HEALTH (ISBH) EXCAVATED BURIED DRUMS FROM A LOCATION IN THE NORTHEAST CORNER OF THE FISHER-CALO ONE-LINE FACILITY. DURING THESE ACTIVITIES, OTHER POTENTIAL BURIAL AND WASTE DISPOSAL AREAS WERE IDENTIFIED. IN JULY 1980, US EPA FILED SUIT UNDER SECTION 7003 OF THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) TO ELIMINATE THE HAZARDS POSED BY THE PREVIOUS DISPOSAL ACTIVITIES AT

## THE FISHER-CALO FACILITIES.

IN 1982, EPA'S FIELD INVESTIGATION TEAM (FIT) CONDUCTED AN INVESTIGATION OF THE SITE. RESULTS OF THE SAMPLING PROGRAM INDICATED ELEVATED LEVELS OF ORGANIC COMPOUNDS IN THE GROUNDWATER, AND HEAVY METALS IN SURFACE SOILS. THE FIT INVESTIGATION ALSO RESULTED IN IDENTIFICATION OF A BURIED MAGNETIC ANOMALY. ADDITIONAL SAMPLING WAS RECOMMENDED TO DEFINE THIS POTENTIAL SOURCE OF GROUNDWATER CONTAMINATION AND THE POTENTIAL FOR FURTHER CONTAMINANT MIGRATION. ON DECEMBER 30, 1982, THE FISHER-CALO SITE WAS PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITIES LIST (NPL). ON SEPTEMBER 8, 1983, THE SITE WAS PROMULGATED ON THE FIRST NPL.

IN AUGUST 1982, US EPA AND FISHER-CALO ENTERED INTO A CONSENT DECREE. THE CONSENT DECREE REQUIRED FISHER-CALO TO MONITOR THREE SELECTED MONITORING WELLS ON A QUARTERLY BASIS TO DETERMINE IF THE CONCENTRATIONS OF CERTAIN PRIORITY POLLUTANTS WOULD DECREASE WITH TIME. FOLLOWING SEVERAL YEARS OF MONITORING, IT BECAME APPARENT THAT THE CONTAMINANT LEVELS HAD NOT DECREASED IN THE SELECTED MONITORING WELLS, THEREBY SUGGESTING THE CONTINUED PRESENCE OF A CONTAMINATION SOURCE. IN JANUARY 1985, THE FISHER-CALO SOLVENT RECLAMATION FACILITIES CEASED OPERATIONS WHEN FISHER-CALO INDUSTRIES DIVESTED ITSELF FROM ITS VARIOUS DIVISIONS. IN APRIL 1985, EPA ISSUED A WORK ASSIGNMENT TO A CONTRACTOR TO CONDUCT AND PERFORM AN RI/FS AT THE FISHER-CALO SITE.

IN DECEMBER 1986, US EPA REQUESTED THAT THE SCOPE OF WORK AT THE FISHER-CALO SITE BE EXPANDED. THE INCREASED SCOPE OF WORK INCLUDED SAMPLING IN SUSPECTED AREAS OF PAST DISPOSAL AND IN SELECTED AREAS ADJACENT TO THE FISHER-CALO SITE.

RI ACTIVITIES BEGAN IN MAY 1987 AND CONTINUED UNTIL AUGUST 31, 1987 WHEN AN ARSON FIRE AT THE FISHER-CALO SITE TRAILER HALTED FIELD ACTIVITIES. THE REMAINING RI ACTIVITIES WERE CONDUCTED FROM MAY THROUGH NOVEMBER 1988.

PRESENTLY, NO NEW WASTE MATERIALS ARE BEING RECEIVED AT THE FACILITY. HOWEVER, DRUMMED WASTES AND TANKS CONTAINING WASTE ARE STILL BEING STORED AT BOTH THE NORTH AND SOUTH SECTIONS OF THE TWO-LINE FACILITY. SOME SOLID WASTE AND DRUMMED WASTE MATERIALS ARE ALSO STILL BEING STORED AT THE ONE-LINE FACILITY. REMOVAL ACTIONS ARE TAKING PLACE AT THE TWO-LINE FACILITY UNDER THE DIRECTION OF US EPA. IT HAS BEEN ASSUMED THAT ALL DRUMS, TANKS, AND CONTAINERS AT THE TWO-LINE FACILITY REQUIRING REMEDIAL ACTION WILL BE SATISFACTORILY RESOLVED IN THESE ACTIONS. THEY ARE NOT, THEREFORE, INCLUDED IN DISCUSSIONS AND COST ESTIMATES IN THIS RECORD OF DECISION.

## #CRH

### COMMUNITY RELATIONS HISTORY

US EPA PUBLISHED THE PROPOSED PLAN IN ACCORDANCE WITH CERCLA SECTION 117. THIS DOCUMENT AND THE FEASIBILITY STUDY (FS) REPORT WERE MADE AVAILABLE TO THE PUBLIC ON APRIL 13, 1990, AT THE BEGINNING OF A 30 DAY PUBLIC COMMENT PERIOD. THE PUBLIC COMMENT PERIOD WAS SUBSEQUENTLY EXTENDED AN ADDITIONAL 30 DAYS TO ACCOMMODATE A REQUEST BY THE POTENTIALLY RESPONSIBLE PARTY (PRP) STEERING COMMITTEE AND THE LAPORTE COUNTY HEALTH DEPARTMENT. A PUBLIC MEETING WAS HELD ON APRIL 26, WHERE APPROXIMATELY 50 PEOPLE ATTENDED AND EXPRESSED THEIR CONCERNS. COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND THE RESPONSES TO THOSE COMMENTS ARE CONTAINED IN THE RESPONSIVENESS SUMMARY (APPENDIX A).

## #SRRA

### SCOPE AND ROLE OF THE RESPONSE ACTION

US EPA INITIATED A REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE FISHER-CALO SITE IN APRIL OF 1985 WHEN A WORK ASSIGNMENT WAS ISSUED TO ONE OF THE AGENCY'S CONTRACTORS. THE RI/FS ACTIVITIES INVOLVED DETERMINING THE NATURE AND EXTENT OF CONTAMINATION AT THE SITE AND EVALUATING THE FEASIBILITY OF VARIOUS REMEDIAL ALTERNATIVES TO CLEAN UP THE SITE.

THIS RECORD OF DECISION (ROD) ADDRESSES CONTAMINATED SOIL, WASTE MATERIAL AND STRUCTURES ON THE SITE, AND CONTAMINATED GROUNDWATER IN THE UNDERLYING AQUIFERS. GROUNDWATER CONTAMINATION WAS DETERMINED TO BE THE PRIMARY EXPOSURE RISK, WITH SURFACE SOIL, THE CARDINAL CHEMICAL DISCHARGE LAGOON, AND ASBESTOS CONTAINING SITE STRUCTURES AND WASTE MATERIALS IDENTIFIED AS ADDITIONAL RISKS. THESE AREAS WERE DETERMINED TO BE THREATS DUE TO THE POTENTIAL RISK FROM INGESTION, DIRECT CONTACT AND INHALATION OF THE CONTAMINATION. THIS IS THE FIRST AND ONLY PLANNED REMEDIAL RESPONSE ACTION AT THE SITE.

## #SC

### SITE CHARACTERISTICS

FORMER FISHER-CALO PROPERTIES ARE PRESENTLY OCCUPIED BY SEVERAL INDEPENDENT COMPANIES WHICH ARE ACTIVELY DOING BUSINESS. THE CURRENT SITE FACILITIES ARE SHOWN ON FIGURE 2. FISHER-CALO SOLD THE PROPERTIES LOCATED ON ONE-LINE ROAD. THE CURRENT OWNERS ARE OPERATING FROM THE FACILITIES ON THESE PROPERTIES. THE REMAINING FISHER-CALO PROPERTIES ARE LEASED AND ARE USED FOR WAREHOUSING, PACKAGING, OR PRODUCTION. THE CURRENTLY OPERATING FACILITIES ON THE FISHER-CALO SITE PROPERTIES INCLUDE:

ONE-LINE ROAD

- ! NATIONAL PACKAGING: PRODUCT PACKAGING AND DISTRIBUTION
- ! CARDINAL CHEMICAL: CHEMICAL MANUFACTURING, INCLUDING CHLORINE, ANHYDROUS AMMONIA, METHYLENE CHLORIDE, AND OTHERS

TWO-LINE ROAD

- ! FISHER-CALO CHEMICAL PLANT (ACID PRODUCTS): WAREHOUSING AND BLENDING OF NON-HAZARDOUS LIQUIDS
- ! NEW PLANT LIFE: MANUFACTURING OF PLANT FOOD, FERTILIZERS AND VARIOUS RELATED PRODUCTS (CURRENTLY SHUTDOWN)
- ! NATIONAL PACKAGING: WAREHOUSING
- ! HUBER MARINE: BOAT STORAGE
- ! MEGAN CHEMICAL: VERTICAL TANK OWNERSHIP
- ! POLAR MOLECULAR: BLENDING OF CHEMICALS

OTHER AREAS OUTSIDE OF THE FISHER-CALO PROPERTIES ON ADJACENT KIDP LAND ARE OCCUPIED BY ACTIVELY OPERATING INDEPENDENT INDUSTRIES. FROM INFORMATION AND DATA COLLECTED TO DATE, SOME OF THESE ACTIVE OPERATIONS ARE WITHIN THE CONTAMINATED AND POTENTIALLY CONTAMINATED AREAS.

A REMOVAL ACTION AT THE NORTH END OF THE TWO-LINE FACILITY IS BEING CONDUCTED UNDER A UNILATERAL REMOVAL ORDER ISSUED BY US EPA. THE REMOVAL ACTION IS BEING CARRIED OUT IN TWO-PHASES: PHASE I INVOLVES THE STAGING OF DRUMS FOR REMOVAL DURING PHASE II. PHASE II INCLUDES THE EXCAVATION OF THE CONTAMINATED SOILS AND BURIED TANKS AND DRUMS LOCATED ON THE NORTH END OF THE TWO-LINE ROAD PROPERTY. THE VISIBLY CONTAMINATED SOILS, TANKS AND DRUMS WILL BE REMOVED FROM THE NORTH END OF THE TWO-LINE ROAD FACILITY AND TRANSPORTED TO AN APPROPRIATE DISPOSAL FACILITY. A FURTHER REMOVAL ACTION IS BEING SCOPED FOR THE SOUTH END OF THE TWO-LINE FACILITY. FOR THE PURPOSES OF THIS RECORD OF DECISION, IT IS ASSUMED THAT ALL DRUMS, TANKS, AND CONTAINERS ON THE TWO-LINE ROAD PROPERTY REQUIRING REMEDIAL ACTION ARE BEING ADDRESSED BY THESE ACTIONS. ADDITIONAL AREAS ON THE ONE-LINE FACILITY AND IMMEDIATELY SOUTH OF THE NATIONAL PACKAGING BUILDING MAY REQUIRE REMOVAL ACTIONS. THESE AREAS ARE ADDRESSED IN THIS ROD.

DATA GATHERED DURING THE REMEDIAL INVESTIGATION (RI) AT THE FISHER CALO SITE INDICATE THE FOLLOWING:

- ! AN UPPER AND A LOWER AQUIFER HAVE BEEN IDENTIFIED AT THE SITE.
- ! THE UPPER, UNCONFINED AQUIFER EXTENDS FROM THE TOP OF THE WATER TABLE (RANGING FROM 3 TO 20 FEET BELOW THE GROUND SURFACE) TO THE TOP OF A SILTY CLAY DEPOSIT AND IS BETWEEN 40 TO 75 FEET THICK.
- ! A SILTY CLAY AQUITARD UNDERLIES THE UPPER AQUIFER THROUGHOUT MUCH OF THE STUDY AREA AND IS APPROXIMATELY 9 TO 17 FEET THICK.
- ! THE SURFACE OF THE SILTY CLAY AQUITARD EXHIBITS AN ELONGATED DEPRESSION THAT TRENDS NORTHWEST TO SOUTHEAST ACROSS THE CENTER OF THE SITE.
- ! A LOWER AQUIFER LIES BETWEEN THE AQUITARD AND AN UNDERLYING HARD, DENSE CLAYEY SILT DEPOSIT BELIEVED TO BE A BASAL TILL.
- ! GROUNDWATER FLOW IN THE UPPER AQUIFER AT FISHER-CALO IS TO THE SOUTH AND SOUTHWEST, WHICH IS CONSISTENT WITH REGIONAL FLOW PATTERNS.

- ! GROUNDWATER VELOCITY IN THE UPPER AQUIFER VARIES ACCORDING TO DEPTH, RANGING FROM 211 FT/YR IN THE SHALLOW PORTION, TO 131 FT/YR IN THE INTERMEDIATE PORTION, TO 41 FT/YR IN THE DEEP PORTION. HOWEVER, ACTUAL GROUNDWATER VELOCITIES WILL VARY ACROSS THE AQUIFER DUE TO VARIATION IN THE COMPOSITION OF THE AQUIFER AS WELL AS VARIATIONS IN HYDRAULIC GRADIENT.
- ! BASED ON THE RESULTS OF THE SAMPLING AND ANALYSIS FROM TWO MONITORING WELLS IN THE LOWER AQUIFER, THE LOWER AQUIFER DOES NOT APPEAR TO BE AFFECTED BY GROUNDWATER CONTAMINATION.
- ! GROUNDWATER DISCHARGE IS OCCURRING AT PRODUCTION WELLS, RESIDENTIAL WELLS, KINGSBURY CREEK, TRAVIS DITCH, AND THE KANKAKEE RIVER.
- ! THE CONTAMINANTS PRESENT IN THE SATURATED ZONE WERE COMPARABLE BETWEEN SOILS AND GROUNDWATER. WITH ONE EXCEPTION, CONTAMINATION APPEARS TO BE LIMITED TO THE SHALLOW AND INTERMEDIATE PORTIONS OF THE UPPER AQUIFER AT DISCRETE LOCATIONS ACROSS THE PROJECT STUDY AREA. THE DEEP PORTION OF THE UPPER AQUIFER IN THE CARDINAL CHEMICAL AREA IS CONTAMINATED.
- ! THE PRIMARY CONTAMINANTS OF CONCERN IN GROUNDWATER ARE THE FOLLOWING CHLORINATED ORGANICS: 1,1,1-TRICHLOROETHANE, 1,2-DICHLOROETHENE, 1,1-DICHLOROETHANE, TRICHLOROETHENE, AND METHYLENE CHLORIDE.
- ! AT LEAST THREE INDIVIDUAL CONTAMINATION PLUMES HAVE BEEN IDENTIFIED (SEE FIGURE 4):
- ONE PLUME IS LOCATED DOWNGRAIENT OF THE OLD WASTE DISPOSAL AREA AT THE FISHER-CALO PLANT.
  - THE SECOND PLUME APPEARS TO ORIGINATE NEAR THE NATIONAL PACKAGING FACILITY.
  - BASED ON THE VARIATION OF COMPOUNDS DETECTED IN EACH WELL NEST, THERE MAY BE SEVERAL PLUMES PRESENT NEAR THE CARDINAL CHEMICAL COMPANY FACILITY.
- ! FIVE SPECIFIC LOCATIONS WERE IDENTIFIED AS HAVING CONTAMINATED SUBSURFACE SOILS THAT ARE LIKELY SOURCES OF GROUNDWATER CONTAMINATION; OTHER THAN THESE AREAS, THE UNSATURATED ZONE WAS RELATIVELY CLEAN. ALL FIVE LOCATIONS CONTAINED THE CONTAMINANTS THAT WERE DETECTED IN THE GROUNDWATER.
- ! AT SOME OF THE LOCATIONS WHERE THE UNSATURATED ZONE WAS CLEAN, SIGNIFICANT CONTAMINATION WAS EXHIBITED IN THE SATURATED ZONE. THESE CONTAMINANTS ARE BEING TRANSPORTED BY THE GROUNDWATER AND WILL BE ADDRESSED AS SUCH.
- ! SURFACE SOILS AT THE SITE ARE CONTAMINATED WITH THE FOLLOWING CHEMICALS OF CONCERN: 1,1,1-TRICHLOROETHANE (TCA), BIS (2-ETHYLHEXYL) PHTHALATE, ISOPHORONE, POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS), AND AROCHLOR-1260 (PCB). THE CARDINAL CHEMICAL FACILITY AREA WAS THE MOST HEAVILY CONTAMINATED AREA.
- ! ELEVATED CONCENTRATIONS (ABOVE 1,000 UG/KG) OF ORGANIC CONTAMINANTS EXIST IN AREAS WHERE DRUMS ARE OR WERE STORED, WHERE WASTE LAGOONS WERE PRESENT AT ONE TIME, OR WHERE WASTE DISPOSAL PITS EXISTED. THESE LOCATIONS ON TWO-LINE ROAD PROPERTY ARE TARGETED FOR THE SURFACE SOIL REMOVAL PROGRAM CURRENTLY BEING CARRIED OUT AS PART OF THE REMOVAL ACTION UNDER THE UNILATERAL ADMINISTRATIVE ORDER.
- ! MANY OF THE CONTAMINANTS DETECTED IN THE SURFACE SOILS WERE ALSO DETECTED IN THE SUBSURFACE SOIL AND GROUNDWATER SAMPLES. ADDITIONAL CONTAMINANTS WERE FOUND IN THE SUBSURFACE SOIL THAT WERE NOT DETECTED AT THE SURFACE, INCLUDING VOCs SUCH AS TCE, TETRACHLOROETHYLENE, TOLUENE, AND XYLENE.
- ! SURFACE WATER SAMPLES FROM TRAVIS DITCH, KINGSBURY CREEK AND THE KANKAKEE RIVER DID NOT CONTAIN ELEVATED CONCENTRATIONS OF CONTAMINANTS. THE SEDIMENT SAMPLES COLLECTED FROM THE DISCHARGE LAGOON ON CARDINAL CHEMICAL PROPERTY CONTAINED ELEVATED LEVELS OF AROCHLOR-1260, CHLOROFORM, AND BIS (2-ETHYLHEXYL) PHTHALATE.

! TWO AREAS OF POTENTIALLY BURIED WASTE MATERIALS WERE IDENTIFIED: ONE ON SPACE LEASING PROPERTY; THE OTHER JUST SOUTHEAST OF THE CARDINAL CHEMICAL PLANT BUILDINGS (SEE FIGURES 13 AND 14). ELEVATED SOIL GAS READINGS WERE OBSERVED ON THE SPACE LEASING PROPERTY, AND ELEVATED SOIL GAS READINGS WERE OBSERVED AND SUBSURFACE FERROUS MATERIAL WAS IDENTIFIED DURING A MAGNETOMETER SURVEY ON THE PROPERTY SOUTHEAST OF CARDINAL CHEMICAL.

#### POST REMEDIAL INVESTIGATION INFORMATION

AFTER RI FIELD WORK WAS COMPLETED, TWO ADDITIONAL SAMPLING EFFORTS INDICATED THAT (1) ASBESTOS IS PRESENT WITHIN THE BUILDINGS ON THE NORTH END OF TWO-LINE ROAD PROPERTY AND (2) NO DOWNGRAIENT PRIVATE OR MUNICIPAL WELLS WERE CONTAMINATED WITH VOLATILE ORGANIC COMPOUNDS (VOCs). BOTH OPERATING KIDP PRODUCTION WELLS WERE ALSO TESTED AND SHOWED NO VOC CONTAMINATION; HOWEVER, A THIRD PRODUCTION WELL, KIDP WELL A, HAD BEEN PREVIOUSLY SHUT DOWN DUE TO VOC CONTAMINATION.

#### #SSR

##### SUMMARY OF SITE RISKS

THE RISK ASSESSMENT FOR THE FISHER-CALO SITE INDICATED THAT THE PRIMARY EXPOSURE PATHWAY WAS THROUGH THE GROUNDWATER, AND THAT THE CONTAMINANT CONCENTRATIONS IN EACH OF THE IDENTIFIED CONTAMINANT PLUMES COULD PRESENT AN UNACCEPTABLE RISK TO HUMAN HEALTH. SOILS IN SOME AREAS OF THE SITE ARE CONSIDERED TO BE SOURCES OF GROUNDWATER CONTAMINATION. POTENTIALLY BURIED DRUMS MAY ALSO BE A CONTINUING SOURCE OF GROUNDWATER CONTAMINATION. ASBESTOS CONTAINED IN MATERIALS LAYING ON THE GROUND AND ASBESTOS WHICH MAY BE PRESENT IN BUILDING EXTERIOR CONSTRUCTION MATERIALS MAY PRESENT AN UNACCEPTABLE RISK TO HUMAN HEALTH. ADDITIONALLY, THE CARDINAL CHEMICAL DISCHARGE LAGOON COULD PRESENT AN UNACCEPTABLE RISK TO HUMAN HEALTH; OTHER SURFACE WATERS NEAR THE SITE DO NOT.

#### #DA

##### DESCRIPTION OF ALTERNATIVES

THE US EPA HAS IDENTIFIED AND EVALUATED AN ARRAY OF REMEDIAL ALTERNATIVES THAT COULD BE USED TO REMEDY THE FISHER-CALO SITE. THE ALTERNATIVES PRESENTED HERE ARE THOSE THAT SURVIVED PRELIMINARY SCREENING TO UNDERGO DETAILED ANALYSIS. IN EVALUATING THESE ALTERNATIVES, US EPA CONSIDERED THE FOLLOWING NINE CRITERIA:

1. OVERALL PROTECTION OF HUMAN HEALTH AND ENVIRONMENT ADDRESSES WHETHER A REMEDY PROVIDES ADEQUATE PROTECTION, AND DESCRIBES HOW RISKS ARE ELIMINATED OR REDUCED THROUGH TREATMENT, ENGINEERING CONTROLS, OR INSTITUTIONAL CONTROLS.
2. COMPLIANCE WITH ARARS ADDRESSES WHETHER A REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) OF OTHER ENVIRONMENTAL STATUTES AND/OR PROVIDE GROUNDS FOR INVOKING A WAIVER.
3. LONG-TERM EFFECTIVENESS AND PERMANENCE REFERS TO THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME, ONCE THE REMEDIAL GOALS HAVE BEEN MET.
4. REDUCTION OF TOXICITY, MOBILITY, OR VOLUME IS THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES THAT A REMEDY MAY EMPLOY.
5. SHORT-TERM EFFECTIVENESS INVOLVES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIOD, AND UNTIL REMEDIAL GOALS ARE ACHIEVED.
6. IMPLEMENTABILITY IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY, INCLUDING THE AVAILABILITY OF THE GOODS AND SERVICES NEEDED TO IMPLEMENT THE CHOSEN SOLUTION.
7. COST INCLUDES CAPITAL AND OPERATION AND MAINTENANCE (O&M) COSTS.
8. SUPPORT AGENCY ACCEPTANCE INDICATES WHETHER, BASED ON ITS REVIEW OF THE RI/FS AND PROPOSED PLAN, THE SUPPORT AGENCY (IDEM) CONCURS, OPPOSES, OR HAS NO COMMENT ON THE PREFERRED ALTERNATIVE.
9. COMMUNITY ACCEPTANCE IS THE DEGREE TO WHICH THE COMMUNITY SUPPORTS THE REMEDY SELECTED.

THE ALTERNATIVES THAT UNDERWENT DETAILED ANALYSIS ARE BRIEFLY DESCRIBED BELOW. REFER TO TABLES 1 AND 2 FOR A

SUMMARY OF THE KEY POINTS AND THE COST OF EACH ALTERNATIVE. DETAILED DESCRIPTIONS OF EACH ALTERNATIVE ARE PRESENTED IN THE FS REPORT.

#### ALTERNATIVE 1 - NO ACTION

#### ALTERNATIVE 2 - SOURCE CONTAINMENT, GROUNDWATER COLLECTION, AND DISCHARGE

ALTERNATIVE 2 INCLUDES A MULTIMEDIA SUBTITLE C RCRA CAP OVER ALL AREAS AS IDENTIFIED IN FIGURES 5 THROUGH 8; GROUNDWATER COLLECTION AND DISCHARGE TO TRAVIS DITCH; THE INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND LIMITED REMOVAL/REPAIR OF EXISTING, ASBESTOS-CONTAINING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

THE AREAS TO BE CAPPED WOULD FIRST BE CLEARED AND GRADED. NEXT A MULTIMEDIA SUBTITLE C RCRA CAP WOULD BE INSTALLED OVER THE DESIGNATED AREAS. THE CAP FROM BOTTOM TO TOP WOULD CONSIST OF COMPACTED CLAY, SYNTHETIC MEMBRANE, A DRAINAGE LAYER, COMPACTED NATIVE SOIL, TOP SOIL AND A VEGETATIVE LAYER. A CROSS-SECTION OF THE CAP IS SHOWN ON FIGURE 9.

EXTRACTION WELLS WOULD BE INSTALLED TO HYDRAULICALLY CONTAIN AND EXTRACT THE CONTAMINATED PLUMES AT THE FISHER-CALO SITE. FROM THE EXTRACTION WELLS, WATER WOULD BE PUMPED TO ONE OF THREE TRAVIS DITCH NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) DISCHARGE POINTS.

A MONITORING WELL SYSTEM WOULD BE INSTALLED TO DETERMINE THE EFFECTIVENESS OF THIS ALTERNATIVE, AND A CONTINGENCY PLAN WOULD BE DEVELOPED TO PROVIDE FURTHER REMEDIAL ACTION IN THE EVENT THAT THE EXTRACTION WELLS ARE NOT EFFECTIVE IN CONTAINING THE CONTAMINATED PLUMES.

A NEW PRODUCTION WELL WOULD BE INSTALLED CAPABLE OF PRODUCING AT LEAST 500 GALLONS PER MINUTE. THIS WELL IS NEEDED TO REPLACE THE CAPACITY OF AN EXISTING PRODUCTION WELL (WELL A) PREVIOUSLY CLOSED DUE TO CONTAMINATION. THIS WELL WOULD BE DRILLED THROUGH THE UPPER AQUIFER AND SILTY-CLAY AQUITARD AND PENETRATE THE LOWER, SEMI-CONFINED AQUIFER.

AN ASBESTOS ASSESSMENT AND LIMITED ASBESTOS REMOVAL/REPAIR OF EXISTING STRUCTURES ON THE TWO-LINE ROAD PROPERTY WOULD ALSO BE PERFORMED. ALL TRANSITE PANELS AND INTACT THERMAL INSULATION WOULD BE ENCAPSULATED. UNDER AN ASBESTOS MANAGEMENT PROGRAM, ALL FRIABLE, DAMAGED ASBESTOS CONTAINING MATERIAL (ACM) WOULD BE WET CLEANED OR HEPA VACUUMED. DUST FROM THE ENTIRE BUILDING IS ASSUMED TO BE A POSSIBLE BEARER OF ASBESTOS FIBERS AND ALL SURFACES WOULD BE WET CLEANED OR HEPA VACUUMED BY QUALIFIED ASBESTOS WORKERS.

#### ALTERNATIVE 3 - IN-SITU STABILIZATION, GROUNDWATER COLLECTION, TREATMENT, REINJECTION, BIOREMEDIATION

ALTERNATIVE 3 INCLUDES THE IN-SITU STABILIZATION OF GROUNDWATER SOURCE AND PCB AREAS; GROUNDWATER COLLECTION, TREATMENT, AND REINJECTION; INSTALLATION OF A NEW WATER SUPPLY WELL; AN ASSESSMENT AND LIMITED REMOVAL/REPAIR OF ASBESTOS CONTAINING EXISTING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

THE AREAS TO BE IN-SITU SOLIDIFIED/STABILIZED ARE IDENTIFIED IN FIGURES 10 THROUGH 12. A VERTICAL DRIVE AUGER WOULD BE USED TO PROCESS APPROXIMATELY 50,000 SQUARE FEET OF SOIL TO A DEPTH OF APPROXIMATELY 17 FEET NOMINAL GROUNDWATER DEPTH. AN OVERLAPPING DRILLING PROCEDURE WOULD BE USED IN ORDER TO ENSURE COMPLETE TREATMENT.

EXTRACTION WELLS WOULD BE INSTALLED TO HYDRAULICALLY CONTAIN THE CONTAMINATED PLUMES AT THE FISHER-CALO SITE, AS DISCUSSED FOR ALTERNATIVE 2. FOLLOWING EXTRACTION, THE WATER WOULD PASS THROUGH A GAC COLUMN, AIR STRIPPER TOWER AND A MULTIMEDIA FILTER. THE TREATED WATER WOULD THEN BE PUMPED TO UPGRADIENT INJECTION WELLS WHERE NUTRIENTS AND TERMINAL ELECTRON ACCEPTORS WOULD BE ADDED. THE WATER WILL THEN PASS THROUGH A MICRO-FILTER AND THEN BE REINJECTED INTO THE CONTAMINATED AQUIFER. THE NUTRIENTS AND TERMINAL ELECTRON ACCEPTORS WILL BIOSTIMULATE INDIGENOUS MICRO-ORGANISMS TO DEGRADE GROUNDWATER CONTAMINANTS.

A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN, AND A NEW PRODUCTION WELL WILL BE INSTALLED. AN ASBESTOS ASSESSMENT AND LIMITED ASBESTOS REMOVAL/REPAIR OF EXISTING STRUCTURES WOULD BE PERFORMED AS DISCUSSED FOR ALTERNATIVE 2.

#### ALTERNATIVE 4 - LIMITED EXCAVATION, ONSITE INCINERATION, GROUNDWATER COLLECTION, TREATMENT, DISCHARGE

ALTERNATIVE 4 INCLUDES THE EXCAVATION AND ONSITE INCINERATION OF GROUNDWATER SOURCE AND PCB AREAS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; AN



ASSESSMENT AND LIMITED REMOVAL/REPAIR OF EXISTING ASBESTOS CONTAINING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

THE AREAS TO BE EXCAVATED AND INCINERATED ARE IDENTIFIED IN FIGURES 10 THROUGH 12. APPROXIMATELY 29,500 CUBIC YARDS OF SOIL WOULD BE EXCAVATED AND INCINERATED IN A CIRCULATING BED COMBUSTION (CBC) UNIT. TCLP AND EP TOXICITY TESTS WOULD BE PERFORMED ON THE ASH RESIDUE TO DETERMINE IF THE UNTREATED ASH MAY BE DISPOSED OF ONSITE. IF THE ASH PASSES THE TCLP AND EP TOXICITY TESTS, THE ASH WOULD BE COMPACTED AND PLACED BACK ONSITE TO FILL EXCAVATION AREAS; IF THE ASH DOES NOT PASS THE TCLP AND EP TOXICITY TESTS, THE ASH WILL BE DISPOSED IN A RCRA COMPLIANT HAZARDOUS WASTE LANDFILL.

EXTRACTION WELLS WILL BE INSTALLED TO EXTRACT ALL CONTAMINATED GROUNDWATER. FOLLOWING EXTRACTION, THE CONTAMINATED GROUNDWATER WOULD BE PUMPED THROUGH A PIPE NETWORK TO A GROUNDWATER TREATMENT FACILITY. THE TREATMENT SYSTEM WOULD CONSIST OF AN EQUALIZATION/SEDIMENTATION BASIN, GAC COLUMN, AND AN AIR STRIPPER TOWER. FOLLOWING TREATMENT, WATER WOULD BE PUMPED TO A TRAVIS DITCH NPDES DISCHARGE POINT.

A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN AND A NEW PRODUCTION WELL WILL BE INSTALLED. AN ASSESSMENT AND LIMITED ASBESTOS REMOVAL/REPAIR OF EXISTING STRUCTURES WOULD BE PERFORMED AS DISCUSSED IN ALTERNATIVE 2.

ALTERNATIVE 5 - LIMITED EXCAVATION, ONSITE LANDFILL, GROUNDWATER COLLECTION, TREATMENT, DISCHARGE

ALTERNATIVE 5 INCLUDES THE EXCAVATION AND ONSITE LANDFILLING OF GROUNDWATER SOURCE AND PCB AREAS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND LIMITED REMOVAL/REPAIR OF ASBESTOS CONTAINING EXISTING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

APPROXIMATELY 29,500 CUBIC YARDS OF SOIL WOULD BE EXCAVATED AND PLACED IN AN ONSITE LANDFILL. THE AREAS TO BE EXCAVATED ARE IDENTIFIED IN FIGURES 10 THROUGH 12. THE LANDFILL WOULD BE LOCATED BETWEEN ONE-LINE AND TWO-LINE ROAD AND WOULD LIE PARTIALLY BELOW GRADE, MAINTAINING AT LEAST 10 FEET BETWEEN THE BOTTOM OF THE LANDFILL AND THE GROUNDWATER TABLE AS REQUIRED BY RCRA. AFTER CONTAMINATED SOILS HAVE BEEN EXCAVATED AND PLACED IN THE LANDFILL, THE LANDFILL WOULD BE CLOSED BY CAPPING WITH A MULTI-LAYER RCRA SUBTITLE C CAP.

A GROUNDWATER TREATMENT SCHEME WOULD BE INSTALLED AS DISCUSSED FOR ALTERNATIVE 4. A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN AND A NEW PRODUCTION WELL WOULD BE INSTALLED. AN ASSESSMENT AND LIMITED ASBESTOS REMOVAL/REPAIR OF EXISTING STRUCTURES WOULD BE PERFORMED AS DISCUSSED FOR ALTERNATIVE 2.

ALTERNATIVE 6 - EXTENSIVE EXCAVATION, SOIL WASH, ONSITE LANDFILL, GROUNDWATER COLLECTION, TREATMENT, DISCHARGE

ALTERNATIVE 6 INCLUDES THE EXCAVATION AND SOIL WASHING OF ALL CONTAMINATED AREAS AND ONSITE RCRA SUBTITLE C LANDFILLING OF SOIL WASH RESIDUALS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND COMPLETE REMOVAL OF EXISTING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

APPROXIMATELY 235,500 CUBIC YARDS OF SOIL WOULD BE EXCAVATED AND TREATED USING ONSITE SOIL WASHING. THE AREAS TO BE EXCAVATED ARE IDENTIFIED IN FIGURES 5 THROUGH 8. FOLLOWING EXCAVATION, SOILS WILL BE TEMPORARILY PLACED IN A PRE-FABRICATED BUILDING; EXCAVATION AND TREATMENT OF THE SOIL WILL OCCUR SIMULTANEOUSLY IN A COORDINATED EFFORT. THE CONTAMINATED SOIL WILL BE FED TO THE TREATMENT PLANT AT THE SITES. AFTER THE SOIL WASH PROCESS, "CLEANED" SOIL WILL BE PLACED BACK ONSITE. CONTAMINATED FROTH FILTER CAKE WILL BE PRODUCED BY THE PROCESS. THIS MATERIAL WILL BE DISPOSED OF IN AN ON-SITE RCRA LANDFILL IN A MANNER SIMILAR TO THAT DISCUSSED FOR ALTERNATIVE 5. A GROUNDWATER TREATMENT SCHEME WILL BE INSTALLED SIMILAR TO THAT DISCUSSED FOR ALTERNATIVE 4. A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN AND NEW PRODUCTION WELL WILL BE INSTALLED AS DISCUSSED FOR ALTERNATIVE 2. AN ASSESSMENT AND COMPLETE REMOVAL OF EXISTING ASBESTOS-CONTAINING STRUCTURES ON TWO-LINE ROAD PROPERTY WOULD BE PERFORMED.

ALTERNATIVE 7 - EXTENSIVE EXCAVATION, ONSITE INCINERATION, GROUNDWATER COLLECTION, TREATMENT, DISCHARGE

ALTERNATIVE 7 INCLUDES THE EXCAVATION OF ALL CONTAMINATED AREAS; THE ONSITE INCINERATION OF ORGANICALLY CONTAMINATED SOILS AND THE ONSITE RCRA LANDFILLING OF INORGANICALLY CONTAMINATED SOILS AND SOILS WHICH DO NOT PASS THE TCLP AND EP TOXICITY TESTS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND COMPLETE REMOVAL OF EXISTING ASBESTOS CONTAINING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

APPROXIMATELY 180,000 CUBIC YARDS OF ORGANICALLY-CONTAMINATED SOIL WOULD BE EXCAVATED AND TREATED USING A CBC INCINERATOR. THE SOILS WITH ORGANIC CONTAMINATION IDENTIFIED IN FIGURES 5 THROUGH 8 CONTAIN, IN SOME INSTANCES, HIGH INORGANIC CONCENTRATIONS. TCLP AND EP TOXICITY TESTS WOULD BE PERFORMED ON THE ASH RESIDUE TO PROVIDE INFORMATION ON WHETHER OR NOT UNTREATED ASH MAY BE DISPOSED OF ONSITE. IF UNTREATED ASH PASSES THE TCLP AND EP TOXICITY TESTS, THE ASH WOULD BE PLACED ONSITE. SOILS THAT DO NOT PASS THE TCLP AND EP TOXICITY TESTS WOULD BE PLACED IN AN ONSITE RCRA LANDFILL.

APPROXIMATELY 53,500 CUBIC YARDS OF INORGANICALLY-CONTAMINATED SOIL WOULD BE EXCAVATED AND PLACED IN AN ONSITE RCRA LANDFILL. THE CONSTRUCTION AND OPERATION OF THIS LANDFILL WOULD BE SIMILAR TO THAT DISCUSSED FOR ALTERNATIVE 5.

A GROUNDWATER TREATMENT SCHEME WILL BE INSTALLED SIMILAR TO THAT DISCUSSED FOR ALTERNATIVE 4. A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN AND NEW PRODUCTION WELL WILL BE INSTALLED AS DISCUSSED FOR ALTERNATIVE 2. AN ASSESSMENT AND COMPLETE REMOVAL OF EXISTING ASBESTOS CONTAINING STRUCTURES ON TWO-LINE ROAD PROPERTY WOULD BE PERFORMED.

ALTERNATIVE 8 - EXTENSIVE EXCAVATION, OFFSITE LANDFILL, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE

ALTERNATIVE 8 INCLUDES THE EXCAVATION AND OFFSITE DISPOSAL OF ALL CONTAMINATED AREAS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND COMPLETE REMOVAL OF EXISTING ASBESTOS CONTAINING STRUCTURES; AND SOIL GAS TESTING, TEST PITS AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES.

APPROXIMATELY 235,500 CUBIC YARDS OF SOIL WOULD BE EXCAVATED AND DISPOSED OF IN AN OFFSITE RCRA HAZARDOUS WASTE LANDFILL. THE AREAS TO BE EXCAVATED ARE IDENTIFIED IN FIGURES 5 THROUGH 8. ALL CONTAMINATED SOILS WOULD BE TRANSPORTED IN ACCORDANCE WITH THE REGULATIONS GOVERNING THE TRANSPORTATION OF HAZARDOUS MATERIALS AS LISTED IN THE CODE OF FEDERAL REGULATIONS (CFR), TITLE 49 AND ANY APPLICABLE STATE REGULATIONS. CLEAN IMPORTED FILL WOULD BE USED FOR BACKFILLING EXCAVATED AREAS. THESE AREAS WOULD BE GRADED TO NEAR PRE-CONSTRUCTION ELEVATIONS, COVERED WITH CLEAN TOP SOIL AND THEN RESEEDDED.

A GROUNDWATER TREATMENT SCHEME WOULD BE INSTALLED SIMILAR TO THAT DISCUSSED FOR ALTERNATIVE 4. A MONITORING WELL SYSTEM AND ASSOCIATED CONTINGENCY PLAN AND NEW PRODUCTION WELL WOULD BE INSTALLED AS DISCUSSED FOR ALTERNATIVE 2. AN ASSESSMENT AND COMPLETE REMOVAL OF EXISTING ASBESTOS CONTAINING STRUCTURES ON TWO-LINE ROAD PROPERTY WOULD BE PERFORMED.

## **#SCAA**

### **SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES**

THE NINE CRITERIA USED FOR EVALUATING THE REMEDIAL ALTERNATIVES LISTED ABOVE INCLUDE: OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT; COMPLIANCE WITH ARARS; LONG-TERM EFFECTIVENESS; REDUCTION OF TOXICITY, MOBILITY OR VOLUME; SHORT-TERM EFFECTIVENESS; IMPLEMENTABILITY; COST; STATE OF INDIANA ACCEPTANCE; AND ACCEPTANCE BY THE COMMUNITIES OF KINGSBURY AND LAPORTE, INDIANA.

BASED ON THESE NINE CRITERIA, THE US EPA HAS SELECTED ALTERNATIVE 4 AS THE PREFERRED ALTERNATIVE FOR THE REMEDIAL ACTION AT THE FISHER-CALO SITE. THE PREFERRED ALTERNATIVE ENTAILS LIMITED EXCAVATION OF GROUNDWATER SOURCE AND PCB AREAS; ON-SITE INCINERATION OF EXCAVATED SOILS; GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH; INSTALLATION OF A NEW WATER SUPPLY WELL; ASSESSMENT AND LIMITED REMOVAL/REPAIR OF EXISTING ASBESTOS CONTAINING STRUCTURES; SOIL GAS TESTING, TEST PITS, AND APPROPRIATE FOLLOW-UP OF SPACE LEASING AND KIDP PROPERTIES; AND GROUNDWATER MONITORING AND THE DEVELOPMENT OF A CONTINGENCY PLAN.

DUE TO COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD, FOUR ELEMENTS OF THE PREFERRED ALTERNATIVE 4 WERE CHANGED. FIRST, IT WAS DETERMINED THAT IT WOULD BE MORE PROTECTIVE AND EFFECTIVE TO REINJECT THE DISCHARGE STREAM FROM THE GROUNDWATER TREATMENT PLANT BACK INTO THE SITE'S SHALLOW AQUIFER RATHER THAN DISCHARGE IT TO TRAVIS DITCH. SECOND, CERTAIN OPERATION AND MAINTENANCE COSTS WHICH WERE OMITTED FROM THE PREFERRED ALTERNATIVE 4 NEEDED TO BE ADDED. THIRD, IMMEDIATE FENCING OF THE ONE-LINE ROAD PROPERTY, THE NATIONAL PACKAGING PROPERTY, AND UNSECURED PERIMETER AREAS OF THE TWO-LINE ROAD PROPERTY SHALL BE IMPLEMENTED TO PREVENT ACCESS AND UNAUTHORIZED ENTRY ONTO THESE PROPERTIES. FOURTH, SOIL FLUSHING, OR SOIL VAPOR EXTRACTION IF PROVEN EFFECTIVE, WILL BE EMPLOYED TO TREAT SOILS CONTAMINATED WITH VOLATILE ORGANIC COMPOUNDS (VOCs) RATHER THAN INCINERATING THESE SOILS. IT WAS DETERMINED THAT THIS TREATMENT WOULD BE MORE EFFECTIVE THAN INCINERATION FOR VOC-CONTAMINATED SOILS REMAINING AFTER EXCAVATION OF PCB AND SEMIVOLATILE-CONTAMINATED SOILS. THE NET RESULT OF THESE CHANGES TO THE PREFERRED ALTERNATIVE IS THAT THE ESTIMATED COST OF THE SELECTED REMEDY IS NOW \$31,685,000 AS COMPARED TO THE \$27,402,000 ESTIMATE FOR ALTERNATIVE 4 IN THE PROPOSED

PLAN. THIS IS A NET INCREASE OF \$4,283,000.

## ANALYSIS

OVERALL PROTECTION: WITH THE EXCEPTION OF ALTERNATIVE 1 AND THE PORTION OF ALTERNATIVE 2 ALLOWING DISCHARGE OF UNTREATED GROUNDWATER TO TRAVIS DITCH, ALL OF THE ALTERNATIVES WOULD PROVIDE ADEQUATE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT. THE PREFERRED ALTERNATIVE PROVIDES PROTECTION AGAINST AN EXISTING RISK BY PROVIDING AN ALTERNATIVE WATER SUPPLY (I.E. REPLACING WELL A); PROTECTION AGAINST DIRECT CONTACT OR SOIL INGESTION BY REMOVING THE PRIMARY AREAS OF SURFACE CONTAMINATION; PROTECTION AGAINST ASBESTOS EXPOSURE BY ASSESSMENT AND LIMITED REMOVAL/REPAIR OF EXISTING STRUCTURES; AND PROTECTION AGAINST FUTURE RISK OF GROUNDWATER INGESTION THROUGH EXCAVATION OF GROUNDWATER SOURCE AREAS, COLLECTION AND TREATMENT OF CONTAMINATED GROUNDWATER, AND GROUNDWATER MONITORING AND DEVELOPMENT OF A CONTINGENCY PLAN.

COMPLIANCE WITH ARARS: NO LOCATION-SPECIFIC ARARS WERE IDENTIFIED FOR THE FISHER-CALO SITE. WITH THE EXCEPTION OF ALTERNATIVES 1 AND 2, ALL ALTERNATIVES WOULD COMPLY WITH ALL CHEMICAL-SPECIFIC AND ACTION-SPECIFIC ARARS. ALTERNATIVE 2 WOULD COMPLY WITH ACTION-SPECIFIC ARARS, BUT NOT ALL CHEMICAL-SPECIFIC ARARS; ALTERNATIVE 1 WOULD NOT COMPLY WITH EITHER TYPE OF ARARS.

LONG-TERM EFFECTIVENESS: ALTERNATIVES 3,4,5,6,7 AND 8 WOULD PROVIDE GOOD LONG-TERM EFFECTIVENESS BY PROTECTING AGAINST: EXISTING RISK FROM WELL A; DIRECT CONTACT OR SOIL INGESTION, FUTURE RISK OF GROUNDWATER INGESTION; AND ASBESTOS EXPOSURE. ALTERNATIVE 1 WOULD LEAVE ALL CONTAMINATED SOILS AND GROUNDWATER IN PLACE AND WOULD HAVE POOR LONG-TERM EFFECTIVENESS. ALTERNATIVE 2 WOULD PROVIDE GOOD LONG-TERM EFFECTIVENESS AGAINST ALL OF THE RISKS LISTED ABOVE BUT WOULD POTENTIALLY CREATE ADDITIONAL RISK THROUGH DISCHARGE OF CONTAMINATED GROUNDWATER TO TRAVIS DITCH. IN ADDITION, ALTERNATIVE 2 WOULD ALLOW CONTAMINATED SOILS TO REMAIN IN PLACE AND WOULD PROVIDE A CAP OVER SOILS, WHICH WOULD INCREASE THE DURATION OF THE REQUIRED GROUNDWATER PUMPING EFFORTS. ALTERNATIVE 3 WOULD PROVIDE AN ADDITIONAL MEASURE OF CONTROL AGAINST CONTAMINANT MIGRATION IN GROUNDWATER SOURCE AND PCB AREAS BUT DOES NOT ADDRESS REMAINING AREAS OF SOIL CONTAMINATION. ADDITIONALLY, ALTERNATIVE 3 PROVIDES A MEASURE TO FLUSH CONTAMINANTS FROM THE SOIL MATRIX. ALTERNATIVES 4 AND 5 PROVIDE FOR EXCAVATION AND REMOVAL OF GROUNDWATER SOURCE AND PCB AREAS. AN INCINERATOR RESIDUE IS ALL THAT WOULD REMAIN TO BE MANAGED IN THESE REMOVAL AREAS FOR ALTERNATIVE 4, AND ALTERNATIVE 5 WOULD PROVIDE A CENTRALIZED LOCATION FOR CONTAMINATED SOILS AND PREVENTATIVE MEASURES FOR CONTAMINANT MIGRATION INTO GROUNDWATER. NEITHER ALTERNATIVE WOULD PROVIDE ACTION FOR REMAINING AREAS OF SOIL CONTAMINATION, AND ALTERNATIVE 5 WOULD ALLOW MATERIALS TO REMAIN IN THE VICINITY OF THE SITE. ALTERNATIVES 6, 7, AND 8 WOULD PROVIDE AN ADDED DEGREE OF SOIL EXCAVATION, WOULD SERVE TO REDUCE THE PERIOD REQUIRED TO PUMP AND TREAT CONTAMINATED GROUNDWATER, AND WOULD PROVIDE FULL REMEDIATION OF ASBESTOS CONTAINING STRUCTURES AS OPPOSED TO STABILIZING ASBESTOS AND ALLOWING IT TO REMAIN IN PLACE. ALTERNATIVE 8 WOULD BE THE MOST EFFECTIVE REMEDY BY PHYSICALLY REMOVING CONTAMINATED SOILS FROM THE SITE.

REDUCTION OF TOXICITY, MOBILITY OR VOLUME: THE TABLE BELOW PROVIDES A RELATIVE RANKING OF ALTERNATIVES FOR THIS CRITERION.

ALTERNATIVE	TOXICITY REDUCTION	MOBILITY REDUCTION	VOLUME REDUCTION
1	NONE	NONE	NONE
2	NONE	INTERMEDIATE	MINIMAL
3	NONE	INTERMEDIATE	MINIMAL
4	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE
5	NONE	INTERMEDIATE	MINIMAL
6	INTERMEDIATE	INTERMEDIATE	MINIMAL - ASBESTOS ONLY
7	SIGNIFICANT	SIGNIFICANT	SIGNIFICANT
8	SIGNIFICANT WITH RESPECT TO SITE ONLY	SIGNIFICANT	SIGNIFICANT WITH RESPECT TO SITE ONLY

SHORT-TERM EFFECTIVENESS: IMPLEMENTATION OF ALTERNATIVE 1 WOULD NOT PRODUCE ANY SHORT-TERM IMPACTS TO THE COMMUNITY, WORKERS, OR THE ENVIRONMENT. EXCAVATION OF TESTS PITS ON SPACE LEASING AND KIDP PROPERTY, WHICH IS INCLUDED IN ALTERNATIVES 2 THROUGH 8, COULD EXPOSE WORKERS AND THE ENVIRONMENT TO CONTAMINATED MATERIALS OR VAPORS. LIMITED ASBESTOS REMOVAL AND REPAIR, WHICH IS INCLUDED IN ALTERNATIVES 2 THROUGH 5, COULD CREATE A SHORT-TERM EXPOSURE TO WORKERS, THE COMMUNITY, AND THE ENVIRONMENT. COMPLETE ASBESTOS REMOVAL WOULD CREATE A MORE SIGNIFICANT POTENTIAL EXPOSURE TO ASBESTOS (ALTERNATIVES 6, 7 AND 8). LIMITED EXCAVATION PROVIDED IN ALTERNATIVES 4 AND 5, AND MORE SIGNIFICANTLY, EXTENSIVE EXCAVATION IN ALTERNATIVES 6, 7, AND 8, WOULD POTENTIALLY EXPOSE WORKERS, THE COMMUNITY, AND ENVIRONMENT TO VOLATILE ORGANICS AND DUST RELEASED DURING EXCAVATION ACTIVITIES. ADDITIONALLY, INCINERATION OF CONTAMINATED SOILS PROVIDED IN ALTERNATIVES 4 AND 7

COULD CREATE EXPOSURE TO CONTAMINANTS DURING STARTUP AND SHUTDOWN PERIODS OR MALFUNCTIONS; HOWEVER, THESE OCCURRENCES ARE EXPECTED TO BE MINIMAL. ALTERNATIVES 5 AND 6, AND TO A MUCH GREATER EXTENT, ALTERNATIVE 8, COULD POTENTIALLY EXPOSE THE WORKERS, COMMUNITY, AND ENVIRONMENT TO CONTAMINATION DURING TRANSPORTATION AND EMPLACEMENT OF MATERIALS INTO THE LANDFILL.

IMPLEMENTABILITY: WITH THE EXCEPTION OF ALTERNATIVES 3 AND 6, WHICH USE INNOVATIVE TECHNOLOGY AND AS SUCH MAY REQUIRE SPECIAL CONSTRUCTION AND OPERATION, ALL ALTERNATIVES WOULD UTILIZE STANDARD MONITORING AND CONSTRUCTION TECHNIQUES WHICH WOULD BE READILY IMPLEMENTABLE. THE NPDES PERMIT REQUIRED AS PART OF ALTERNATIVE 2 MAY NOT BE POSSIBLE TO OBTAIN.

COST: THE COSTS OF EACH ALTERNATIVE ARE PRESENTED IN TABLE 2 AND ARE SUMMARIZED BELOW:

ALTERNATIVE	CAPITAL COST	O&M	TOTAL PRESENT WORTH
1	\$0	\$0	\$0
2	\$6,449,000	\$7,057,000	\$13,506,000
3	\$6,553,000	\$10,013,000	\$16,566,000
4	\$22,306,000	9,379,000	\$31,685,000
5	\$28,611,000	\$1,158,000	\$29,769,000
6	\$73,624,000	\$26,250,000	\$99,874,000
7	\$137,449,000	\$8,434,000	\$145,883,000
8	\$149,095,000	\$344,000	\$149,439,000

STATE ACCEPTANCE: THE STATE OF INDIANA SUPPORTS THE PREFERRED ALTERNATIVE.

COMMUNITY ACCEPTANCE: COMMUNITY ACCEPTANCE OF THE PREFERRED ALTERNATIVE IS EVALUATED IN THE ATTACHED RESPONSIVENESS SUMMARY.

## #SR

### THE SELECTED REMEDY

THE SELECTED REMEDY FOR THE FISHER-CALO SITE IS ALTERNATIVE 4, AS AMENDED BY THE CHANGES MADE IN RESPONSE TO PUBLIC COMMENTS (I.E. REINJECTION OF TREATED GROUNDWATER AS OPPOSED TO DISCHARGE TO TRAVIS DITCH, THE REVISED COST ESTIMATE, FENCING, AND FLUSHING/SOIL VAPOR EXTRACTION OF VOC-CONTAMINATED SOILS AS OPPOSED TO INCINERATION). BASED ON CURRENT INFORMATION, THIS ALTERNATIVE PROVIDES THE BEST BALANCE AMONG THE ALTERNATIVES WITH RESPECT TO US EPA'S NINE CRITERIA.

### FENCING

THE FACILITY SHALL BE FENCED IN A MANNER SUFFICIENT TO PREVENT ACCESS TO THE ONE-LINE ROAD FACILITY, TWO-LINE ROAD FACILITY, AND NATIONAL PACKAGING FACILITY. WARNING SIGNS SHALL BE POSTED AT 200-FOOT INTERVALS ALONG THE FENCE ADVISING THAT THE AREA IS HAZARDOUS DUE TO CHEMICALS IN THE SOILS WHICH MAY POSE A RISK TO PUBLIC HEALTH. SUCH SIGNS MAY BE REMOVED ONCE ALL SOIL REMEDIATION ACTIVITIES ARE COMPLETED.

### SOIL EXCAVATION AND INCINERATION

SOIL SAMPLING SUFFICIENT TO FULLY DELINEATE THE HORIZONTAL AND VERTICAL EXTENT OF CONTAMINATION IN THE SEMIVOLATILE AND PCB AREAS, SHOWN APPROXIMATELY ON FIGURES 10 THROUGH 12, AND ALL AREAS COVERED BY THE PRIOR AND ONGOING REMOVAL ACTIONS SHALL BE CONDUCTED. SOIL SHALL BE EXCAVATED AND INCINERATED UNTIL ALL OF THE FOLLOWING CLEANUP LEVELS HAVE BEEN ACHIEVED:

CONTAMINANT	CLEANUP LEVEL
PCBS	10 PPM
ISOPHORONE	18 PPM
BIS(2-ETHYLHEXYL) PHTHALATE	5.4 PPM

ALL NECESSARY MEASURES SHALL BE TAKEN DURING EXCAVATION TO ENSURE THAT THE RELEASE OF CONTAMINANTS TO THE AIR IS MINIMIZED. EXCAVATED AREAS SHALL BE BACKFILLED WITH CLEAN IMPORTED FILL AND/OR INCINERATION ASH WHICH PASSES THE TCLP AND EP TOXICITY TESTS. ALL EXCAVATED SOILS SHALL BE INCINERATED IN AN ON-SITE COMBUSTION UNIT CAPABLE OF ACHIEVING COMPLIANCE WITH ALL REQUIREMENTS OF RCRA, TSCA AND ANY APPLICABLE STATE LAWS OR REGULATIONS. PRIOR TESTING SHALL BE PERFORMED TO DETERMINE THE SUITABILITY OF THE UNIT FOR MEETING

DESTRUCTION EFFICIENCIES AND OTHER REQUIREMENTS OF RCRA, TSCA AND STATE REGULATIONS.

TCLP AND EP TOXICITY TESTS SHALL BE PERFORMED ON THE ASH RESIDUE TO PROVIDE DATA TO DETERMINE WHETHER UNTREATED ASH MAY BE DISPOSED OF ONSITE. IF THE UNTREATED ASH PASSES THE TCLP AND EP TOXICITY TESTS, THE ASH MAY BE PLACED BACK ONSITE TO FILL EXCAVATION AREAS. CLEAN SOIL COVER SHALL BE PLACED OVER ASH BACKFILL TO ALLOW VEGETATIVE GROWTH SIMILAR TO THAT IN AREAS SURROUNDING THE EXCAVATION AREAS. ASH WHICH DOES NOT PASS THE TCLP AND EP TOXICITY TESTS SHALL BE TRANSPORTED TO AN OFFSITE RCRA-COMPLIANT LANDFILL.

#### SOIL FLUSHING/SOIL VAPOR EXTRACTION

DURING REMEDIAL DESIGN, CLEANUP LEVELS OF VOCs IN SOILS SHALL BE ESTABLISHED WHICH SHALL ENSURE THAT THE GROUNDWATER CLEANUP LEVELS ESTABLISHED BELOW BE ATTAINED. VOC-CONTAMINATED SOILS WHICH REMAIN AFTER EXCAVATION OF PCB AND SEMIVOLATILE-CONTAMINATED SOILS SHALL BE TREATED UNTIL THE ESTABLISHED VOC SOIL CLEANUP LEVELS ARE ACHIEVED. TREATMENT OF THESE SOILS SHALL INCLUDE, AT A MINIMUM, SOIL FLUSHING. IF OTHER TREATMENT METHODS SUCH AS SOIL VAPOR EXTRACTION OR NUTRIENT ADDITIONS TO SOIL FLUSHING CAN BE PROVEN EFFECTIVE FOR ACHIEVING THE VOC SOIL CLEANUP LEVELS, THEN THESE METHODS MAY BE EMPLOYED AFTER SUCH PROOF IS MADE.

#### GROUNDWATER EXTRACTION, TREATMENT AND REINJECTION

PRE-DESIGN WORK SHALL BE PERFORMED TO ENSURE THAT EXTRACTION WELL PLACEMENT WILL BE SUFFICIENT TO HYDRAULICALLY CONTAIN AND REMOVE THE THREE CONTAMINANT PLUMES IDENTIFIED DURING THE REMEDIAL INVESTIGATION (SEE FIGURE 4) AS WELL AS ANY OTHER PLUMES IDENTIFIED DURING REMEDIAL DESIGN OF REMEDIAL ACTION, AND ENSURE THAT INJECTION WELLS WILL BE PLACED PROPERLY TO OPTIMIZE FLUSHING AND PLUME CONTAINMENT. BASED ON THE PRE-DESIGN WORK, EXTRACTION WELLS SHALL BE INSTALLED TO HYDRAULICALLY CONTAIN THE CONTAMINANT PLUMES AND EXTRACT CONTAMINATED GROUNDWATER FOR TREATMENT.

FOLLOWING EXTRACTION, THE GROUNDWATER SHALL BE PUMPED TO AN EQUALIZATION/SEDIMENTATION BASIN AND THEN PASSED THROUGH AN AIR STRIPPER TOWER. THE TREATED WATER SHALL BE PUMPED TO THE INJECTION WELLS, PASSED THROUGH A MICRO-FILTER, AND THEN REINJECTED INTO THE CONTAMINATED AQUIFER. REINJECTION SHALL BE PERFORMED TO FLUSH CONTAMINANTS FROM THE SOILS AS WELL AS THE GROUND WATER. THE CONTAMINATED AIR FROM THE AIR STRIPPER SHALL BE PASSED THROUGH A GAC COLUMN TO REMOVE ORGANIC CONTAMINANTS. CONTAMINATED GAC SHALL BE DISPOSED OF IN A MANNER WHICH SHALL MINIMIZE THE RELEASE OF CONTAMINANTS TO THE AIR.

THE EXTRACTION AND TREATMENT SYSTEM SHALL BE OPERATED UNTIL THE CONCENTRATIONS OF THE FOLLOWING CONTAMINANTS IN THE GROUNDWATER MONITORING WELLS AT THE DOWNGRADIENT PLUME BOUNDARY DO NOT EXCEED THE CONCENTRATIONS LISTED BELOW, OR STANDARDS OR LEVELS WHICH ARE PROMULGATED IN THE FUTURE, FOR EIGHT CONSECUTIVE QUARTERLY MONITORING EVENTS:

CONTAMINANT	CLEANUP LEVEL
TRICHLOROETHYLENE	5 PPB
TRANS 1,2-DICHLOROETHYLENE	70 PPB
1,1,1-TRICHLOROETHANE	200 PPB
METHYLENE CHLORIDE	5 PPB
VINYL CHLORINE	2 PPB

THE EXTRACTION AND TREATMENT SYSTEM SHALL BE STARTED UP AGAIN IF THESE LEVELS ARE EXCEEDED IN SUBSEQUENT MONITORING EVENTS.

#### GROUNDWATER MONITORING SYSTEM AND CONTINGENCY PLAN

A MONITORING WELL SYSTEM CONSISTING OF WELLS SCREENED IN THE UPPER AQUIFER AND WELLS SCREENED IN THE LOWER AQUIFER SHALL BE INSTALLED TO DETERMINE THE EFFECTIVENESS OF THIS REMEDY, AND TO DETERMINE IF ADDITIONAL CONTAMINANT PLUMES NOT IDENTIFIED DURING THE RI EXIST AT THE SITE. TO THE EXTENT PRACTICABLE, EXISTING RI WELLS SHALL BE INCORPORATED INTO THIS SYSTEM.

A CONTINGENCY PLAN SHALL BE DEVELOPED TO PROVIDE FURTHER REMEDIAL ACTION IN THE EVENT THAT THE EXTRACTION WELLS ARE NOT EFFECTIVE IN CONTAINING THE CONTAMINATED PLUMES, OR DRINKING WATER OR HEALTH-BASED STANDARDS FOR ANY CONTAMINANT ARE EXCEEDED IN THE FUTURE.

#### NEW PRODUCTION WELL

A NEW PRODUCTION WELL SHALL BE INSTALLED CAPABLE OF PRODUCING AT LEAST 500 GALLONS PER MINUTE. THIS WELL

SHALL REPLACE THE CAPACITY OF AN EXISTING PRODUCTION WELL (KIDP WELL A) PREVIOUSLY SHUT DOWN DUE TO CONTAMINATION AND SHALL BE LOCATED OUTSIDE OF THE INFLUENCE OF THE EXTRACTION WELL SYSTEM IN CONSULTATION WITH KIDP REPRESENTATIVES. IF POSSIBLE, EXISTING KIDP WELL A SHALL BE USED AS AN EXTRACTION WELL.

#### ASBESTOS CONTAINING STRUCTURES

AN ASBESTOS ASSESSMENT SHALL BE CONDUCTED ON THE TWO-LINE ROAD PROPERTY, ONE-LINE ROAD PROPERTY AND NATIONAL PACKAGING PROPERTY BY QUALIFIED ASBESTOS WORKERS. THE FOLLOWING ACTIONS SHALL BE TAKEN WITH RESPECT TO ASBESTOS-CONTAINING MATERIALS (ACM) ON THESE PROPERTIES:

- ! BUILDING INTERIORS - NO ACTION
- ! BUILDING EXTERIORS - ENCAPSULATION OF FRIABLE ACM
- ! MATERIALS NOT IN OR ON BUILDINGS OR STRUCTURES - REMOVAL AND DISPOSAL OF ACM IN ACCORDANCE WITH REGULATION CONTAINED IN 40 CFR PART 61.

PERSONNEL IN BUILDINGS CONTAINING ACM IN THE INTERIOR SHALL BE NOTIFIED REGARDING THE NATURE AND CONDITION OF ACM IN THESE BUILDINGS.

#### POTENTIALLY BURIED DRUMS

TWO AREAS WHERE BURIED DRUMS AND/OR OTHER CONTAINERS MAY HAVE COME TO BE LOCATED HAVE BEEN IDENTIFIED ON KIDP AND SPACE LEASING PROPERTY. THESE APPROXIMATE LOCATIONS ARE INDICATED ON FIGURES 13 AND 14. SOIL GAS SURVEYS SHALL BE CONDUCTED IN THESE AREAS AND THE IMMEDIATE VICINITY TO IDENTIFY POTENTIAL ORGANIC CONTAMINATION. BASED ON THE RESULTS OF THE SOIL GAS SURVEYS, TEST PITS SHALL BE EXCAVATED TO IDENTIFY POTENTIALLY BURIED DRUMS AND/OR OTHER CONTAINERS.

THE FOLLOWING ACTIONS SHALL BE TAKEN BASED ON OBSERVATIONS AND FINDINGS DURING THE EXCAVATION OF THE TEST PITS:

- ! NO DRUMS OR CONTAINERS FOUND- BACKFILL TEST PITS.
- ! EMPTY DRUMS OR CONTAINERS FOUND- CRUSH AND PROPERLY DISPOSE OF EMPTIES; PERFORM SOIL SAMPLING IN VICINITY OF DRUMS OR CONTAINERS; RECOMMEND AND PERFORM FOLLOW-UP ACTIONS CONSISTENT WITH OTHER PORTIONS OF THIS ROD BASED ON SAMPLING RESULTS.
- ! DRUMS OR CONTAINERS FOUND WITH CONTENTS- EXCAVATE AND PROPERLY DISPOSE OF DRUMS AND/OR CONTAINERS; PERFORM SOIL SAMPLING IN VICINITY OF DRUMS OR CONTAINERS; RECOMMEND AND PERFORM FOLLOW-UP ACTIONS CONSISTENT WITH OTHER PORTIONS OF THIS ROD BASED ON SAMPLING RESULTS.

#### ONE-LINE AND NATIONAL PACKAGING REMOVAL SCOPING/ACTION

DRUMS, TANKS AND CONTAINERS LOCATED ON THE ONE-LINE FACILITY AND IMMEDIATELY SOUTH OF THE NATIONAL PACKAGING BUILDING (SEE FIGURE IN DECLARATION FOR THE RECORD OF DECISION) SHALL BE INSPECTED AND SAMPLED, AND THE FOLLOWING ACTIONS SHALL BE TAKEN BASED ON THE RESULTS OF THESE INSPECTIONS AND SAMPLING EVENTS:

- ! EMPTY DRUMS OR CONTAINERS FOUND- CRUSH AND PROPERLY DISPOSE OF EMPTIES; PERFORM SOIL SAMPLING IN VICINITY OF DRUMS OR CONTAINERS; RECOMMEND AND PERFORM FOLLOW-UP ACTIONS CONSISTENT WITH OTHER PORTIONS OF THIS ROD BASED ON SAMPLING RESULTS.
- ! DRUMS OR CONTAINERS FOUND WITH CONTENTS- EXCAVATE AND PROPERLY DISPOSE OF DRUMS AND/OR CONTAINERS; PERFORM SOIL SAMPLING IN VICINITY OF DRUMS OR CONTAINERS; RECOMMEND AND PERFORM FOLLOW-UP ACTIONS CONSISTENT WITH SECTION IX OF THIS ROD BASED ON SAMPLING RESULTS.

#### #SD

#### STATUTORY DETERMINATIONS

BASED ON THE INFORMATION AVAILABLE AT THIS TIME, US EPA BELIEVES THIS ALTERNATIVE SATISFIES STATUTORY REQUIREMENTS TO: PROTECT HUMAN HEALTH AND THE ENVIRONMENT; ATTAIN ARARS, BE COST-EFFECTIVE; AND UTILIZE

PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

#### PROTECTIVENESS

THE SELECTED REMEDY WILL BE PROTECTIVE TO BOTH HUMAN HEALTH AND THE ENVIRONMENT BY COMPLETELY AND PERMANENTLY TREATING OR IMMOBILIZING ALL CONTAMINATED WASTES. EXCAVATION AND ON-SITE INCINERATION OF THE SEMIVOLATILE AND PCB AREAS WILL PERMANENTLY TREAT AND ELIMINATE CONTAMINATION. ANY POSSIBLE RCRA CHARACTERISTIC WASTE THAT MAY REMAIN IN THE FORM OF INCINERATOR ASH WILL BE TESTED AND DISPOSED OF IN AN APPROVED LANDFILL. GROUNDWATER EXTRACTION, TREATMENT AND REINJECTION WOULD CONTAIN, TREAT AND ELIMINATE THE OFFSITE MIGRATION OF GROUNDWATER CONTAMINATION. THE DISPOSAL OF FRIABLE AND DAMAGED ASBESTOS CONTAINING MATERIAL (ACM) WHICH IS LOCATED OUTSIDE THE SITE BUILDINGS WOULD ELIMINATE DIRECT CONTACT AND INHALATION RISKS TO HUMAN HEALTH. THE INSTALLATION OF AN ADDITIONAL MONITORING WELL SYSTEM WILL DETERMINE THE EFFECTIVENESS OF THE REMEDY. AN ASSOCIATED CONTINGENCY PLAN WOULD BE DEVELOPED TO PROVIDE FURTHER REMEDIAL ACTION IN THE EVENT THAT THE EXTRACTION WELLS ARE NOT EFFECTIVE IN CONTAINING THE CONTAMINATED GROUNDWATER.

#### ATTAINMENT OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) REQUIRES THAT REMEDIAL ACTIONS MEET LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER ENVIRONMENTAL LAWS. THESE LAWS MAY INCLUDE: THE TOXIC SUBSTANCES CONTROL ACT, THE SAFE DRINKING WATER ACT, THE CLEAN AIR ACT, THE CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), AND ANY STATE LAW WHICH HAS STRICTER REQUIREMENTS THAN THE CORRESPONDING FEDERAL LAW.

##### ! RCRA SUBTITLE C INCINERATOR

THE STATE OF INDIANA HAS JURISDICTION FOR RCRA SUBTITLE C, HAZARDOUS WASTE INCINERATOR OPERATION LAWS. THESE STANDARDS ARE FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES AND SPECIFICALLY APPLIES TO OWNERS AND OPERATORS OF HAZARDOUS WASTE INCINERATORS. THE REGULATION SEEKS TO MINIMIZE TOXIC INCINERATOR EMISSIONS AND ENSURE PROPER DISPOSAL OF INCINERATOR ASH. THE INCINERATOR WOULD HAVE TO MEET THE TESTING AND PERFORMANCE STANDARDS IN 40 CFR 264.341, 264.351, 264.343, 264.342, 7611.70 AND SPECIAL STATE OF INDIANA REQUIREMENTS, INCLUDING A TEST BURN AND EXTENSIVE STACK SAMPLING.

##### ! GROUNDWATER CONTINGENCY PLAN ACTION LEVELS

ACTION LEVELS FOR THE GROUNDWATER CONTINGENCY PLAN SHALL BE ADOPTED FROM THE MAXIMUM CONTAMINANT LEVELS (MCLS) AND MAXIMUM CONTAMINANT LEVEL GOALS (MCLGS) ESTABLISHED UNDER THE SAFE DRINKING WATER ACT, AND THE APPROPRIATE STATE OF INDIANA WATER QUALITY STANDARDS. GROUNDWATER CONTINGENCY PLANS WILL BE TRIGGERED IF CONCENTRATIONS OF CONTAMINANTS IN THE GROUNDWATER EXCEED ACTION LEVELS AT THE POINTS OF COMPLIANCE.

##### ! SOIL EXCAVATION CLEANUP LEVELS

DUE TO THE SITUATION THAT, WITH THE EXCEPTION OF PCBS, THERE ARE NO PROMULGATED SOIL CLEANUP STANDARDS, SOIL EXCAVATION CLEANUP LEVELS HAVE BEEN DETERMINED BY TBC CRITERIA AT THE FISHER-CALO SITE. SOIL EXCAVATION WILL BE CONTINGENT ON ACQUIRING MAXIMUM PCB LEVELS OF 10 PPM, MAXIMUM BIS(2-ETHYLHEXYL) PHTHALATE CONCENTRATIONS OF 5.4 PPM, AND MAXIMUM ISOPHORONE CONCENTRATIONS OF 18 PPB.

##### ! ASBESTOS CLEANUP STANDARDS

ASBESTOS REMOVAL IS GOVERNED BY THE NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS, 40 CFR PART 61, SUBPART M. ALL ASBESTOS ENCAPSULATION, REMOVAL AND DISPOSAL SHALL BE IN ACCORDANCE WITH NESHAP REQUIREMENTS.

#### COST EFFECTIVENESS

THE SELECTED REMEDY IS COST EFFECTIVE IN THAT IT ADDRESSES THE PRINCIPLE THREATS USING TREATMENT TO THE MAXIMUM EXTENT PRACTICABLE AT A COST THAT IS PROPORTIONATE TO THE PROTECTION PROVIDED. THE COST IS ROUGHLY 1 TO 2 TIMES THE COST OF ALTERNATIVES WHICH PROVIDE THE SAME DEGREE OF PROTECTION BUT DO NOT UTILIZE TREATMENT AND PERMANENT SOLUTIONS TO THE SAME DEGREE TO REDUCE TOXICITY, MOBILITY, AND VOLUME. THE COST IS 3 TO 6 TIMES LESS THAN THAT OF ALTERNATIVES WHICH PROVIDE THE SAME DEGREE OF PROTECTION, BUT DEAL WITH A MUCH GREATER AMOUNT OF CONTAMINATED SOIL IN ORDER TO REDUCE THE TIME REQUIRED FOR GROUND WATER EXTRACTION, AND, THEREBY, ARE NOT COST EFFECTIVE.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

THE SELECTED REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE. THE REMEDY WOULD PERMANENTLY REMOVE AND TREAT CONTAMINATION FROM GROUNDWATER AND SOILS, PRECISELY THOSE AREAS WHERE MAXIMUM HUMAN EXPOSURE WOULD OCCUR. THE GROUNDWATER PUMP AND TREATMENT SYSTEM WOULD ELIMINATE CONTAMINATION FROM THE UNDERLYING AQUIFER, AND THE SITE INCINERATOR WOULD ELIMINATE CONTAMINATION FROM THE SOILS.

#### PREFERENCE FOR TREATMENT AS A PRINCIPLE ELEMENT

THE SELECTED REMEDY SATISFIES THE STATUTORY PREFERENCE FOR REMEDIES THAT EMPLOY TREATMENT THAT ACHIEVES SUBSTANTIAL RISK REDUCTION THROUGH CONTAINMENT AND ELIMINATION OF GROUNDWATER CONTAMINATION, AND ELIMINATION OF SOIL CONTAMINATION.

#### #RS

#### RESPONSIVENESS SUMMARY

##### RESPONSIVENESS SUMMARY OVERVIEW

IN ACCORDANCE WITH CERCLA SECTION 117, A PUBLIC COMMENT PERIOD WAS HELD FROM APRIL 13 TO JUNE 13, 1990, TO ALLOW INTERESTED PARTIES TO COMMENT ON THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S (US EPA'S) FEASIBILITY STUDY (FS) AND PROPOSED PLAN FOR A FINAL REMEDY AT THE FISHER-CALO SUPERFUND SITE. AT AN APRIL 26, 1990, PUBLIC MEETING, US EPA AND IDEM PRESENTED THE PROPOSED PLAN FOR THE FISHER-CALO SITE, ANSWERED QUESTIONS AND ACCEPTED COMMENTS FROM THE PUBLIC. WRITTEN COMMENTS WERE ALSO RECEIVED THROUGH THE MAIL.

##### BACKGROUND ON COMMUNITY CONCERN

THE FISHER-CALO SITE IS COMPRISED OF FOUR AREAS IN THE KINGSBURY INDUSTRIAL DEVELOPMENT PARK IN LAPORTE COUNTY, INDIANA. LOCATED ABOUT 2 MILES SOUTHWEST OF THE SITE ARE THE VILLAGES OF TRACY (POPULATION 1000) AND KINGSFORD HEIGHTS (POPULATION 1200). THE NEAREST LARGE MUNICIPAL AREA IS THE CITY OF LAPORTE (POPULATION 25,000).

A FIRE AT THE SITE IN 1978 CREATED SIGNIFICANT PUBLIC CONCERN, RAISING THE ISSUE OF THE POSSIBILITY OF ANOTHER FIRE OR A POSSIBLE EXPLOSION. CURRENT ISSUES INCLUDE CONCERNS ABOUT THE GROUND WATER AND MOVEMENT OF THE PLUME OF CONTAMINATION.

##### SUMMARY OF SIGNIFICANT COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND US EPA RESPONSES

THE COMMENTS ARE ORGANIZED INTO THE FOLLOWING CATEGORIES:

###### A. SUMMARY OF COMMENTS FOR THE LOCAL COMMUNITY

1. COMMENTS REGARDING PUBLIC NOTICE OF FEASIBILITY STUDY
2. COMMENTS REGARDING LENGTH OF THE PUBLIC COMMENT PERIOD
3. COMMENTS REGARDING THE TAG PROCESS
4. COMMENTS REGARDING THE PROPOSED INCINERATOR
5. COMMENTS REGARDING PAST EXPERIENCE WITH US EPA AT THE SITE
6. COMMENTS REGARDING OTHER POTENTIAL REMEDIES FOR THE SITE
7. COMMENTS REGARDING ASPECTS OF THE PREFERRED ALTERNATIVE OTHER THAN INCINERATION
8. COMMENTS REGARDING SPEED WITH WHICH THE REMEDIAL ACTION IS UNDERTAKEN
9. COMMENTS REGARDING SITE ACCESS FOR LOCAL OFFICIALS
10. COMMENTS REGARDING AN AREA IN PORTER COUNTY, INDIANA WHERE DEBRIS IS LOCATED.

###### B. SUMMARY OF COMMENTS FROM POTENTIALLY RESPONSIBLE PARTIES.

THE COMMENTS ARE PARAPHRASED IN ORDER TO EFFECTIVELY SUMMARIZE THEM IN THIS DOCUMENT. THE READER IS REFERRED TO THE PUBLIC MEETING TRANSCRIPT AND WRITTEN COMMENTS WHICH ARE AVAILABLE AT THE PUBLIC INFORMATION REPOSITORIES.

###### A. SUMMARY OF COMMENTS FROM THE LOCAL COMMUNITY

1. COMMENTS WERE RECEIVED ABOUT RECEIPT OF THE FEASIBILITY STUDY AT THE LAPORTE COUNTY HEALTH DEPARTMENT. IT WAS BELIEVED THAT THE STUDY WAS NOT AVAILABLE WHEN THE PUBLIC NOTICE SAID IT WAS.

US EPA RESPONSE: THE FEASIBILITY STUDY AND PROPOSED PLAN WERE SENT TO THE TWO INFORMATION REPOSITORIES (THE



LAPORTE COUNTY HEALTH DEPARTMENT AND THE LAPORTE PUBLIC LIBRARY) BY US MAIL-NEXT DAY SERVICE ON APRIL 12, 1990. RECEIPT BY THE LIBRARY WAS CONFIRMED BY PHONE ON APRIL 13. A PHONE CALL TO THE US EPA COMMUNITY RELATIONS COORDINATOR BY A STAFF MEMBER AT THE LAPORTE COUNTY HEALTH DEPARTMENT INDICATED IT HAD NOT ARRIVED THERE, BUT A FOLLOW-UP CALL BY THE SAME STAFF MEMBER CONFIRMED THAT IT HAD ARRIVED.

2. COMMENTS WERE RECEIVED INDICATING THE PUBLIC MEETING IS ONE OF THE FEW CHANCES THE PUBLIC HAS TO COMMENT ON THE FEASIBILITY STUDY AND PROPOSED PLAN AND THAT THE PUBLIC COMMENT PERIOD WAS NOT A SUFFICIENT LENGTH.

US EPA RESPONSE: PUBLIC NOTICE PUBLISHED APRIL 11, 1990 ANNOUNCED THE COMMENT PERIOD WAS TO RUN THROUGH MAY 14, 1990. THE PUBLIC WAS TOLD IT COULD MAKE COMMENTS BY MAILING THEM TO THE COMMUNITY RELATIONS COORDINATOR AT US EPA AND THAT COMMENTS WOULD BE RECEIVED AT THE PUBLIC MEETING APRIL 26, 1990. SUBSEQUENTLY A REQUEST WAS RECEIVED ASKING THAT THE PUBLIC COMMENT PERIOD BE EXTENDED. THAT EXTENSION WAS GRANTED AND IT WAS ANNOUNCED BY PUBLIC NOTICE ON MAY 11, 1990 THAT THE COMMENT PERIOD HAD BEEN EXTENDED TO JUNE 13, 1990. ALSO, US EPA PERSONNEL HAVE BEEN AVAILABLE TO THE PUBLIC THROUGHOUT THE INVESTIGATION AND STUDY PROCESS VIA PHONE, MAIL OR AT PUBLIC MEETINGS.

3. IN A SERIES OF QUESTIONS, CLARIFICATION WAS REQUESTED ABOUT THE TECHNICAL ASSISTANCE GRANT (TAG) PROCESS. US EPA INDICATED THE TAG COULD BE MADE AVAILABLE TO HIRE CONTRACTORS TO "DO SOME STUDIES OR REVIEW THE STUDIES THAT ARE BEING DONE."

US EPA RESPONSE: TAGS ARE AVAILABLE TO CITIZENS' GROUPS WHO ARE INTERESTED IN HIRING A CONSULTANT TO HELP INTERPRET INFORMATION REGARDING SITE INVESTIGATION AND CLEAN-UP. THEY ARE AVAILABLE AT ANY TIME DURING THE INVESTIGATION/CLEAN-UP PROCESS. THEY ARE NOT MADE AVAILABLE TO DO NEW OR INDEPENDENT STUDIES.

#### 4. COMMENTS REGARDING INCINERATION

A. COMMENT: ONE COMMENTER EXPRESSED CONCERN THAT THE INCINERATOR BE MONITORED TO ASSURE THE PCBS AND OTHER TOXIC MATERIALS ARE REMOVED TO A LEVEL OF 99.9999 PERCENT AS PROJECTED AND THE TEMPERATURES IN EXCESS OF 1600 DEGREES FAHRENHEIT MAY BE REQUIRED TO ACHIEVE THIS LEVEL.

US EPA RESPONSE: AS PART OF THE REQUIREMENTS OF THE RESOURCES CONSERVATION AND RECOVERY ACT (RCRA) AND THE TOXIC SUBSTANCES CONTROL ACT (TSCA), ANY INCINERATOR USED AT THE SITE MUST BE MONITORED TO ACHIEVE 99.9999 PERCENT DESTRUCTION REMOVAL EFFICIENCY (DRE) FOR PCBS AND 99.99 PERCENT DRE FOR OTHER COMPOUNDS. THESE REGULATIONS APPLY TO AND SHALL BE MET AT THE FISHER-CALO SITE. TEMPERATURES IN EXCESS OF 1600 DEGREES FAHRENHEIT ARE NOT ALWAYS NECESSARY TO ACHIEVE THE ABOVE-STATED DRES. THE TYPE OF INCINERATOR USED FOR THE COST ESTIMATES IN THE FS REPORT, THE CIRCULATING BED COMBUSTOR, CAN ACHIEVE THE REQUIRED DRES AT TEMPERATURE, RESIDENCE TIME, AND FEED RATE/MIXING, SO THE TEMPERATURE CAN VARY IF THE OTHER PARAMETERS ARE CHANGED.

B. COMMENT: TWO COMMENTERS EXPRESSED CONCERN ABOUT THE INCINERATOR BEING INSTALLED AND REMAINING ON-SITE AFTER PROJECT COMPLETION OR RECEIVING WASTE OTHER THAN THOSE FROM THE FISHER-CALO SITE.

US EPA RESPONSE: AS PART OF THE SELECTED REMEDY, A MOBILE INCINERATION UNIT WOULD BE INSTALLED ON-SITE TO ONLY INCINERATE CONTAMINATED SOILS FROM THE FISHER-CALO SITE, KINGSBURY, INDIANA, AND WOULD DISMANTLED AND REMOVED FROM THE SITE AFTER PROJECT COMPLETION.

C. COMMENT: DURING THE APRIL 26, 1990 PUBLIC MEETING, ONE COMMENTER STATED THAT ALTERNATE 4 IS NOT THE RIGHT ALTERNATIVE AND DOES NOT MEET EIGHT OF THE NINE EVALUATION CRITERIA.

US EPA RESPONSE: US EPA HAS DETERMINED THAT ALTERNATIVE 4 IS THE APPROPRIATE REMEDY FOR THE SITE AND DISAGREES WITH THE STATEMENT MADE REGARDING THE NINE CRITERIA. ALTERNATIVE 4 ACHIEVES OVERALL PROTECTIVENESS, LONG-TERM EFFECTIVENESS AND REDUCTION IN TOXICITY, MOBILITY, AND VOLUME, IS IMPLEMENTABLE AND ACCEPTED BY THE STATE OF INDIANA, AND, IF PROPERTY IMPLEMENTED, WILL ACHIEVE COMPLIANCE WITH ALL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER ENVIRONMENTAL LAWS AND WILL NOT PRESENT AN UNACCEPTABLE SHORT-TERM RISK TO PUBLIC HEALTH AND THE ENVIRONMENT. THUS, ALTERNATIVE 4 "MEET" SEVEN OF THE NINE CRITERIA; THE TWO REMAINING CRITERIA, COST AND COMMUNITY ACCEPTANCE, ARE marginally achieved by ALTERNATIVE 4. THIS ALTERNATIVE SATISFIES US EPA'S STANDARD OF REPRESENTING THE BEST BALANCE OF THE NINE CRITERIA.

D. COMMENT: TWO COMMENTERS EXPRESSED CONCERN OVER DISPOSAL OF WASTE ASH FROM THE INCINERATOR, STATING THAT HIGH LEVELS OF HEAVY METALS MAY CREATE GROUND WATER CONTAMINATION AND THAT ASH SHOULD BE DISPOSED OF IN AN OFF-SITE HAZARDOUS WASTE LANDFILL.

US EPA RESPONSE: INCINERATOR ASH WILL BE TESTED TO DETERMINE WHETHER IT MAY BE "DELISTED". THE DELISTING PROCESS ALLOWS US EPA TO EXCLUDE A SPECIFIC WASTE AT A SPECIFIC FACILITY FROM REGULATION AS A HAZARDOUS

WASTE, BASED ON TECHNICAL INFORMATION PROVIDED TO THE AGENCY. THUS, DELISTED ASH WOULD NOT BE CONSIDERED TO BE A RCRA LISTED OR CHARACTERISTIC HAZARDOUS WASTE. A SUFFICIENT NUMBER OF SAMPLES WILL BE TAKEN TO ACCURATELY CHARACTERIZE THE CONTAMINANTS IN THE ASH. ASH WHICH CANNOT BE DELISTED WILL BE DISPOSED OF IN AN OFF-SITE HAZARDOUS WASTE LANDFILL. ASH WHICH CAN BE DELISTED WILL BE USED TO BACKFILL EXCAVATION AREAS. DELISTED ASH WOULD NOT BE REGULATED UNDER ANY APPLICABLE LAWS AND WOULD NOT BE CONSIDERED LEACHABLE TO THE GROUND WATER; THUS, DELISTED ASH WOULD NOT CREATE GROUND WATER CONTAMINATION. THERE IS NO REASON TO REQUIRE SPECIAL TREATMENT OF THE DELISTED ASH, AND IT IS CONVENIENT AND SENSIBLE TO USE IT AS BACKFILL IN EXCAVATED AREAS.

E. COMMENT: ONE COMMENTER EXPRESSED CONCERN OVER THE LACK OF A REQUIREMENT OF A RCRA PERMIT FOR A ON-SITE INCINERATOR.

US EPA RESPONSE: EVEN THOUGH A RCRA PERMIT IS NOT REQUIRED FOR CERCLA ACTIONS CONDUCTED ENTIRELY ON-SITE, SUCH AS THE INCINERATOR TO BE USED AT THE FISHER-CALO SITE, THE INCINERATOR WOULD STILL BE REQUIRED TO MEET THE PERFORMANCE AND STANDARD, SUCH AS DRES, AND THE OPERATIONAL STANDARDS, SUCH AS TEMPERATURE AND AUTOMATIC WASTE FEED CUTOFF, REQUIRED UNDER TCRA AND TSCA. COMPLIANCE WITH THESE STANDARDS WILL ENSURE PROPER OPERATION OF THE INCINERATOR.

F. COMMENT: ONE COMMENTER EXPRESSED SUPPORT FOR INCINERATION AS THE PROPER METHOD TO REMEDIATE CONTAMINATED SOILS AT THE SITE AND STATED THAT ALL SOILS THAT COULD CAUSE GROUNDWATER CONTAMINATION SHOULD BE EXCAVATED.

US EPA RESPONSE: US EPA APPRECIATES THE SUPPORT OF THE SELECTED REMEDY. THE SELECTED REMEDY WILL, IN FACT, INVOLVE THE EXCAVATION OF ALL PCB AND SEMIVOLATILE CONTAMINATED SOILS THAT COULD CAUSE GROUND WATER CONTAMINATION; HOWEVER, VOC-CONTAMINATED SOILS WILL BE REMEDIATED BY SOIL FLUSHING AND/OR OTHER TREATMENT, SUCH AS SOIL VAPOR EXTRACTION IF PROVEN EFFECTIVE AT THE SITE. IT IS NOT APPROPRIATE TO INCINERATE THE VOC CONTAMINATED SOIL AT THIS SITE, GIVEN THE LOW SOIL CLEANUP LEVELS NECESSARY TO PREVENT FURTHER GROUND WATER CONTAMINATION.

G. COMMENT: ONE COMMENTER EXPRESSED CONCERNS ABOUT THE QUALITY AND ACCURACY OF THE TESTING OF WASTE ASH DURING A CONTINUOUS BURN OPERATION OF AN INCINERATOR.

US EPA RESPONSE: THE INCINERATOR TO BE EMPLOYED AT THE FISHER-CALO SITE IS NOT REQUIRED TO BE A CONTINUOUS BURN OPERATION; IT IS REQUIRED TO MEET THE PROVISIONS OF RCRA AND TSCA. IF AN INCINERATOR SUCH AS THAT USED FOR COST ESTIMATES IN THE FS REPORT (CIRCULATING BED COMBUSTOR) IS EMPLOYED, ASH WOULD BE RANDOMLY SAMPLED FROM THE HOPPER USED TO COLLECT THE ASH. A CIRCULATING BED COMBUSTOR IS NOT "CONTINUOUS" IN THE TRUE SENSE OF THE WORD. WASTE IS PULSED INTO THE COMPOSITION CHAMBER, NOT FED ON A CONVEYOR BELT.

H. COMMENT: ONE COMMENTER EXPRESSED CONCERNS ABOUT THE RELEASE AND SUBSEQUENT ENVIRONMENTAL ACCUMULATION OF DIOXINS AND FURANS, ESPECIALLY 2, 3, 7, 8 TCDD.

US EPA RESPONSE: DIOXIN PRECURSORS, THOSE COMPOUNDS SUCH AS POLYCHLORINATED BIPHENYLS (PCBS), WHICH MIGHT COMBINE TO FORM DIOXINS, WERE FOUND AT LOW CONCENTRATIONS AT THE SITE AND AT ISOLATED LOCATIONS. THE ESTIMATED VOLUME OF PCB-CONTAINING SOIL TO BE INCINERATED IS 1500 CUBIC YARDS, WHICH IS ONLY 5 PERCENT OF THE ESTIMATED QUANTITY OF SOIL TO BE INCINERATED. IN ADDITION, THE INCINERATOR WILL BE REQUIRED TO MEET DRES OF 99.9999 PERCENT FOR PCBS WHICH ASSURES VIRTUAL COMPLETE COMBUSTION, AND THEREFORE, VERY MINIMAL FORMATION OF DIOXINS AND FURANS. STUDIES HAVE SHOWN THAT CHLORINE IS PREFERENTIALLY CONVERTED TO HYDROGEN CHLORIDE (HCL) GAS DURING THE INCINERATION PROCESS. EMISSIONS OF HCL WILL BE MONITORED TO ENSURE EPA EMISSION STANDARDS (UNDER RCRA) ARE BEING MET. ALL OF THESE FACTORS COMBINED MAKE THE POSSIBILITY OF DIOXIN FORMATION DURING INCINERATION VERY LOW.

5. COMMENT REGARDING PAST EXPERIENCE WITH US EPA AT THE FISHER-CALO SITE.

COMMENT: ONE COMMENTER STATED THAT HE HAD A GOOD WORKING RELATIONSHIP WITH US EPA DURING PREVIOUS IMMEDIATE REMOVAL ACTIONS AND HAS RESPECT FOR US EPA

US EPA RESPONSE: US EPA APPRECIATES THIS STATEMENT, THANKS THE COMMENTER FOR HIS INPUT, AND HOPES TO CONTINUE WITH A GOOD WORKING RELATIONSHIP THROUGHOUT THE REMEDIAL ACTION FOR THE SITE.

6. COMMENTS REGARDING OTHER POTENTIAL REMEDIES FOR THE SITE.

A. COMMENT: ONE COMMENTER STATED THEY FELT THAT CHEMICAL FIXATION/STABILIZATION AND SOLIDIFICATION/STABILIZATION WOULD BE PARTICULARLY EFFECTIVE AT THE FISHER-CALO SITE.

US EPA RESPONSE: US EPA HAS DETERMINED THAT CHEMICAL FIXATION/STABILIZATION AND SOLIDIFICATION/STABILIZATION ARE NOT THE MOST APPROPRIATE REMEDIES AT THE SITE FOR A NUMBER OF REASONS INCLUDING THE FACT THAT THOSE TECHNOLOGIES WOULD NOT PERMANENTLY TREAT THE SOIL, ONLY CONTAIN IT. THE SELECTED REMEDY WOULD PERMANENTLY TREAT THE ONSITE SOIL, AND IS PREFERRED TO CHEMICAL FIXATION AND SOLIDIFICATION/STABILIZATION.

B. COMMENT: TWO COMMENTERS STATED THAT BIOLOGICAL DEGRADATION (BIOLOGICAL REMEDIATION) WOULD BE AN EFFECTIVE TREATMENT AT THE FISHER-CALO SITE.

US EPA RESPONSE: US EPA AGREES THAT BIOLOGICAL REMEDIATION IS A TECHNOLOGY THAT MAY HAVE POTENTIAL APPLICATION AT THE FISHER-CALO SITE. WE DO NOT FEEL, THOUGH, THAT BIOREMEDIATION CAN BE USED AS THE SOLE REMEDY AT THE FISHER-CALO SITE BECAUSE IT HAS A RANGE OF EFFECTIVENESS DEPENDING ON SITE SPECIFIC CONDITIONS, AND IS NOT AS PROVEN AS THE TREATMENTS LISTED IN THE SELECTED REMEDY, AMONG OTHER REASONS. THEREFORE, BIOREMEDIATION WAS NOT INCLUDED IN THE SELECTED REMEDY.

C. COMMENT: ONE COMMENTER STATED THAT SOIL VAPOR EXTRACTION WOULD BE AN EFFECTIVE TREATMENT AT THE FISHER-CALO SITE BECAUSE THE VAST MAJORITY OF THE CONTAMINANTS IN THE SOIL ARE OF A VOLATILE NATURE.

US EPA RESPONSE: US EPA AGREES THAT SOIL VAPOR EXTRACTION CAN BE AN EFFECTIVE AND PROVEN TREATMENT WITH VOLATILE CONTAMINANTS IN SOILS, BUT NOT EFFECTIVE WITH PCBS, NON-VOLATILE CONTAMINANTS. HOWEVER, BASED ON THE COMMENTS RECEIVED, US EPA HAS ALLOWED FOR THE USE OF SOIL VAPOR EXTRACTION IN THE ROD, IF PROVEN EFFECTIVE, FOR AREAS CONTAINING ONLY VOLATILE ORGANIC CONTAMINATION.

7. COMMENTS REGARDING ASPECTS OF THE PREFERRED ALTERNATIVE OTHER THAN INCINERATION.

A. COMMENT: TWO COMMENTERS STATED THAT IT WOULD BE MORE DESIRABLE TO REINJECT THE TREATED GROUNDWATER RATHER THAN DISCHARGE IT TO TRAVIS DITCH.

US EPA RESPONSE: BASED ON PUBLIC COMMENT, THE SELECTED REMEDY WILL REINJECT TREATED GROUNDWATER BACK INTO THE UNDERLYING AFFECTED AQUIFER RATHER THAN DISCHARGE IT TO TRAVIS DITCH.

B. COMMENT: ONE COMMENTER STATED THAT THE SITE SHOULD BE COMPLETELY SECURED TO LIMIT VEHICULAR TRAFFIC.

US EPA RESPONSE: BASED ON PUBLIC COMMENT, THE FISHER-CALO SITE WILL BE SECURED WITH A PERIMETER FENCE.

C. COMMENT: ONE COMMENTER STATED THAT THE ASBESTOS PLAN SHOULD BE REASSESSED TO INCLUDE ALL BUILDING SIDING AND ROOFING BEING REMOVED, AND THE SITE SHOULD BE COMPLETELY CLEANED OF ALL CRUMBLING AND DISCARDED ASBESTOS MATERIAL.

US EPA RESPONSE: US EPA FEELS THAT ASBESTOS STABILIZATION IN THE SITE BUILDINGS IS PREFERRED TO REMOVAL AND DISPOSAL, AS REMOVAL CREATES AND INCREASED EXPOSURE RISK TO SITE WORKERS AND THE PUBLIC.

8. TWO COMMENTERS STATED THAT THEY WANTED THE SITE CONTAMINATION TO BE CLEANED UP AS QUICKLY AS POSSIBLE.

US EPA RESPONSE: US EPA ALSO DESIRES THAT THE SITE CLEANUP PROCEED QUICKLY. THAT IS WHY WE ARE UTILIZING BOTH REMOVAL AND REMEDIAL ACTIONS AT THE SITE. US EPA HAS ALREADY INITIATED A REMOVAL ACTION TO DEAL WITH ANY RISKS POSING AN IMMEDIATE THREAT TO THE PUBLIC. THE SELECTED REMEDY WILL DEAL WITH THE LONG-TERM RISKS AT THE FISHER-CALO SITE.

9. ONE COMMENTER STATED THAT LOCAL OFFICIALS SHOULD HAVE ACCESS TO THE FISHER-CALO SITE FOR INDEPENDENT MONITORING.

US EPA RESPONSE: US EPA ENCOURAGES ANY ADDITIONAL ASSISTANCE THAT STATE AND LOCAL OFFICIALS WISH TO PROVIDE. WE WELCOME STATE AND LOCAL OFFICIALS WHO HAVE INDEPENDENT ACCESS AGREEMENTS AS LONG AS THE INDIVIDUALS HAVE COMPLETED THE REQUIRED SAFETY TRAINING FOR HAZARDOUS WASTE SITE ACCESS.

10. COMMENT REGARDING AN AREA IN PORTER COUNTY, INDIANA WHERE DEBRIS IS LOCATED.

COMMENT: ONE RESIDENT OF MICHIGAN CITY, INDIANA STATED THAT THERE IS A VERY LARGE DEBRIS DUMP IN A RESIDENTIAL NEIGHBORHOOD IN PORTER COUNTY, INDIANA WHICH IS LOWERING PROPERTY VALUES AND POSSIBLY CREATING AN UNSAFE ENVIRONMENT. THE COMMENTER INQUIRED AS TO WHERE HELP COULD BE FOUND.

US EPA RESPONSE: AS THIS IS NOT AN ISSUE WHICH US EPA HAS AUTHORITY TO DEAL WITH UNDER THE SUPERFUND PROGRAM, THE COMMENT LETTER IS BEING FORWARDED TO THE LOCAL HEALTH DEPARTMENT.

B. SUMMARY OF COMMENTS FROM POTENTIALLY RESPONSIBLE PARTIES (PRPS).

1. COMMENT: ONE PRP SUBMITTED A REPORT REGARDING AN ALTERNATE SOILS CLEANUP METHOD (AS OPPOSED TO INCINERATION) AND MADE THE COMMENTS THAT INCINERATION IS FAR TOO COSTLY AND THAT A MODIFICATION OF ALTERNATIVE 3 BE ADOPTED FOR THIS SITE WHICH WOULD EMPLOY THIS ALTERNATE SOILS CLEANUP METHOD, NAMELY (1) LIMITED EXCAVATION AND OFF-SITE INCINERATION OF PCB CONTAMINATED SOIL, (2) ON-SITE SOIL VAPOR EXTRACTION, (3) IN-SITU BIODEGRADATION, AND (4) IN-SITU FIXATION.

US EPA RESPONSE: US EPA REVIEWED THE REPORT SUBMITTED WITH THE COMMENT, WHICH PROVIDES SUPPORTING DOCUMENTATION FOR THE ALTERNATE SOILS CLEANUP METHOD, AND THANKS THE COMMENTER FOR PROVIDING THIS DOCUMENTATION.

US EPA AGREES THAT INCINERATION IS A MORE COSTLY OPTION THAN THE MODIFICATION OF ALTERNATE 3 PRESENTED BY THE COMMENTER; HOWEVER, COST IS ONLY ONE OF NINE CRITERIA USED TO EVALUATE REMEDIES FOR A SITE. US EPA AGREES WITH THE COMMENTER TO THE EXTENT THAT, GIVEN THE REQUIRED SOIL CLEANUP LEVELS FOR VOCs, TECHNOLOGIES OTHER THAN INCINERATION MAY BE MORE APPROPRIATE FOR VOCs AT THIS SITE. A TREATMENT SUCH AS SOIL VAPOR EXTRACTION IF PROVEN EFFECTIVE, OR SOIL FLUSHING CAN BE APPLIED FOR VOCs IN SOILS AT THE SITE, AND THE ROD HAS BEEN WRITTEN TO REFLECT THIS. US EPA ALSO AGREES THAT INCINERATION IS THE APPROPRIATE TREATMENT TECHNOLOGY FOR PCB-CONTAMINATED SOIL. US EPA DOES NOT AGREE THAT AN OFF-SITE INCINERATOR IS REQUIRED FOR THE PCB-CONTAMINATED SOILS OR THAT IN-SITU BIODEGRADATION IS APPROPRIATE FOR SOILS CONTAMINATED WITH SEMI-VOLATILE COMPOUNDS. PLEASE REFER TO THE RESPONSE TO COMMAND 4.C. ABOVE FOR A DESCRIPTION OF HOW ALTERNATIVE 4, AS AMENDED BY THE CHARGES MADE IN RESPONSE TO PUBLIC COMMENTS, MEETS THE NINE EVALUATION CRITERIA. BASICALLY, INCINERATION IS LIKELY TO BE MORE COSTLY THAN IN-SITU BIODEGRADATION; HOWEVER, HIGHER COST IS JUSTIFIED BY THE FACT THAT ANY INCINERATOR USED WILL BE REQUIRED TO MEET A 99.99 PERCENT DRE FOR SEMIVOLATILES AND THAT INCINERATION IS A PROVEN, EFFECTIVE METHOD TO PERMANENTLY DESTROY SEMIVOLATILES. PERMANENCE OF REMEDIES IS A PREFERENCE STRESSED IN BOTH SARA AND THE NEW NATIONAL CONTINGENCY PLAN (NCP), AND INCINERATION, IF PROPERLY IMPLEMENTED, WILL ACHIEVE PERMANENT DESTRUCTION OF NEARLY ALL OF THE SEMIVOLATILES IN SOILS REQUIRING CLEANUP. IN-SITU BIODEGRADATION IS AN UNPROVEN INNOVATIVE TECHNOLOGY FOR TREATMENT OF SOILS CONTAMINATED WITH THE SEMIVOLATILE COMPOUNDS FOUND IN HIGHER CONCENTRATIONS AT THE FISHER-CALO SITE. THERE IS UNCERTAINTY AS TO BE EFFECTIVENESS OF IN-SITU BIODEGRADATION IN TREATING THESE SEMI-VOLATILES. IT HAS NOT BEEN DEMONSTRATED THAT THE CLEANUP LEVELS REQUIRED IN THE ROD CAN BE ACHIEVED BY THIS TECHNOLOGY. IT IS FOR THESE REASONS THAT IN-SITU BIODEGRADATION WAS SCREENED OUT IN THE FEASIBILITY STUDY AND NOT RECOMMENDED IN THE PROPOSED PLAN. THE COMMENTER IS REFERRED TO THE FEASIBILITY STUDY FOR AN IN-DEPTH DISCUSSION OF THE RELATIVE MERITS OF INCINERATION AND DISADVANTAGES OF IN-SITU BIODEGRADATION AND OTHER RELATED TECHNOLOGIES.

IN SUMMARY, US EPA AGREES WITH THE COMMENTER THAT 1) INCINERATION IS APPROPRIATE FOR PCB-CONTAMINATED SOIL AND 2) SOIL VAPOR EXTRACTION OR SIMILAR TECHNOLOGY MAY BE APPROPRIATE FOR VOC-CONTAMINATED SOILS THAT REMAIN AFTER PCB AND SEMIVOLATILE-CONTAMINATED SOILS ARE INCINERATED. US EPA DISAGREES WITH THE COMMENTER THAT IN-SITU BIODEGRADATION IS APPROPRIATE FOR REMEDIATING SEMIVOLATILE-CONTAMINATED SOILS BECAUSE IT IS INNOVATIVE, UNPROVEN TECHNOLOGY FOR USE ON THE SEMIVOLATILES FOUND AT THE SITE, AND THE CLEANUP LEVELS AND THE REMEDIAL ACTION GOALS IN THE ROD MAY NOT BE ACHIEVED BY THIS TECHNOLOGY. INCINERATION, ON THE OTHER HAND, IS A PROVEN TECHNOLOGY WHICH WILL RESULT IN PERMANENT DESTRUCTION OF THE BULK OF THE SEMIVOLATILES CONTAINED IN THESE SOILS, WHICH IS CONSISTENT WITH THE PREFERENCES STATED IN SARA AND THE NCP. US EPA IS CONFIDENT THAT USE OF THE INCINERATION TO TREAT SEMIVOLATILE-CONTAMINATED SOILS WILL ACHIEVE THE SOIL CLEANUP LEVELS AND THE REMEDIAL ACTION GOALS STATED IN THE ROD. GIVEN THESE FACTS, THE ADDITIONAL COST OF INCINERATION IS CLEARLY JUSTIFIED.

2. ONE COMMENTER SUBMITTED COMMENTS ON BEHALF OF THE FISHER-CALO PRP STEERING COMMITTEE. THE COMMENTS WERE SUBMITTED IN REPORT FORM WITH AN EXECUTIVE SUMMARY AT THE BEGINNING OF THE REPORT. THE FOLLOWING COMMENTS WERE MADE IN THE EXECUTIVE SUMMARY (COPIED VERBATIM). EPA'S RESPONSE FOLLOWS EACH COMMENT.

A. COMMENT: THE FS IS BASED ON AN INADEQUATE RI. THE AREAS OF SOIL AND GROUND WATER CONTAMINATION HAVE NOT BEEN DELINEATED. THEREFORE, THERE IS NOT SUFFICIENT INFORMATION IN RI TO SUPPORT A FEASIBILITY STUDY WITH A RATIONAL AND DEFENSIBLE EVALUATION OF REMEDIAL ALTERNATIVE AND COSTS.

US EPA RESPONSE: US EPA DISAGREES WITH THESE STATEMENTS. AS WITH ANY RI, THERE ARE DATA GAPS; HOWEVER, THE RI DATA, ALONG WITH DATA GATHERED BEFORE AND AFTER THE RI AND DURING REMOVAL ACTIVITIES AT THE TWO-LINE ROAD PROPERTY, SUFFICIENTLY DELINEATE THE AREAS OF CONTAMINATION AND PROVIDE SUFFICIENT INFORMATION FOR THE SELECTION OF A REMEDY FOR THE FISHER-CALO SITE. COST ESTIMATES PROVIDED IN ANY FS REPORT CONTAIN A MEASURE OF UNCERTAINTY; DETAILED COST ESTIMATES ARE REQUIRED IN THE SUBSEQUENT REMEDIAL DESIGN PHASE. THE COST ESTIMATES PROVIDED IN THE FS REPORT, AS AMENDED BY PUBLIC COMMENTS, ARE SUFFICIENT FOR SCREENING THE REMEDIAL ALTERNATIVES AND SELECTING THE APPROPRIATE REMEDY FOR THE SITE.

B. COMMENT: THE FS USED CONSERVATIVE AND ARBITRARY EXPOSURE ASSESSMENTS TO DEVELOP REMEDIAL GOALS. IN ADDITION, THE REMEDIATION GOALS USED IN THE FS ARE INCONSISTENT WITH THE RISK ASSESSMENT.

US EPA RESPONSE: US EPA DISAGREES WITH THESE STATEMENTS. REMEDIAL GOALS FOR THE FISHER-CALO SITE WERE DEVELOPED CONSISTENT WITH US EPA GUIDANCE AND APPROACHES USED FOR OTHER SUPERFUND SITES, AND REMEDIATION GOALS STATED IN THE FS ARE CONSISTENT WITH THE RISK ASSESSMENT, NAMELY, GROUNDWATER IS THE MAIN PATHWAY OF CONCERN, SOIL OR SEDIMENT CONTAMINATION PRESENTS A POTENTIAL DIRECT CONTACT RISK IN SEVERAL ISOLATED AREAS, SOIL CONTAMINATION REPRESENTS A SOURCE OF CONTINUING GROUND WATER CONTAMINATION, AND ASBESTOS ON AND AROUND EXISTING STRUCTURES PRESENTS A POTENTIAL RISK VIA INHALATION.

C. COMMENT: THE MOST EFFECTIVE REMEDIAL TECHNOLOGY (SOIL VAPOR EXTRACTION) WAS ELIMINATED FOR INSUFFICIENT REASONS. SOIL VAPOR EXTRACTION IS WELL SUITED TO REMOVE THE PREDOMINANT SITE CONTAMINANTS, VOLATILE ORGANIC COMPOUNDS (VOCs).

US EPA RESPONSE: SOIL VAPOR EXTRACTION (SVE) IS NOT THE MOST EFFECTIVE REMEDIAL TECHNOLOGY. IN FACT, SVE WAS ELIMINATED FROM THE FINAL LIST OF ALTERNATIVES BECAUSE IT IS NOT EFFECTIVE IN TREATING SEMIVOLATILES AND PCBS. HOWEVER, US EPA AGREES THAT SVE MAY BE EFFECTIVE IN REMOVING VOCs FROM THE SOILS, AND THE ROD HAS BEEN WRITTEN TO ALLOW FOR THE USE OF SVE, IF PROVEN EFFECTIVE, FOR VOCs AT THIS SITE.

D. COMMENT: THE CONCEPTUAL DESIGN FOR GROUND WATER REMEDIAL TECHNOLOGIES IS MISCONFIGURED. IN MOST OF THE ALTERNATIVES, ACTIVATED CARBON WAS PLACED AHEAD OF AIR STRIPPING, WHICH IS CONTRARY TO NORMAL PRACTICE.

US EPA RESPONSE: US EPA AGREES WITH THE COMMENTER. THE FS LANGUAGE WAS AMBIGUOUS, AND IT WAS NEVER US EPA'S INTENT TO USE ACTIVATED CARBON AHEAD OF AIR STRIPPING. THE ROD HAS BEEN WRITTEN TO REFLECT THE CORRECT SEQUENCE OF TREATMENT, AS STATED BY THE COMMENTER.

E. COMMENT: THERE IS NO RELIABLE BASIS FOR THE ESTIMATES OF SOIL VOLUMES TO BE REMEDIATED. IN THE FS, MORE THAN ONE-HALF OF THE STUDY AREAS WERE CHARACTERIZED BASED UPON A SINGLE SOIL SAMPLE LOCATION, CONTRARY TO ACCEPTED PRACTICE. ACTUAL SOIL VOLUMES REQUIRING REMEDIATION COULD BE AN ORDER OF MAGNITUDE LARGER OR SMALLER THAN THOSE ASSUMED IN THE FS. THE TECHNOLOGY SELECTION AND COST ANALYSIS BASED ON THE ESTIMATED SOIL VOLUMES ARE SUSPECT.

US EPA RESPONSE: US EPA DISAGREES WITH THIS COMMENT. IT IS TRUE THAT, DUE TO THE SIZE AND COMPLEXITY OF THIS SITE, IT IS MORE DIFFICULT TO ACCURATELY ESTIMATE THE SOIL VOLUMES REQUIRING TREATMENT THAN IT WOULD BE FOR SOME OTHER SITES; HOWEVER, US EPA HAS DETERMINED THAT COST ESTIMATES PROVIDED IN THE FS, AS AMENDED BY PUBLIC COMMENTS, ARE SUFFICIENT TO ALLOW COMPARISON OF ALTERNATIVES AND THE SELECTION OF THE APPROPRIATE REMEDY FOR THE SITE.

F. COMMENT: THE FS RECOMMENDS ALTERNATIVE 4. A MAJOR COST COMPONENT OF THIS ALTERNATIVE IS INCINERATION OF SOIL. INCINERATION WAS SELECTED BECAUSE OF ITS ABILITY TO REMEDIATE BASE-NEUTRAL ORGANICS AND PCBS, AS WELL AS VOLATILE ORGANICS. HOWEVER, VOLATILE ORGANICS (THE MAJOR CONTAMINANT OF CONCERN AT THE SITE) CAN BE MORE EFFECTIVELY ADDRESSED BY SOIL VAPOR EXTRACTION. THE EVALUATION OF FEASIBILITY, IMPLEMENTABILITY, AND COST OF THIS ALTERNATIVE IS SERIOUSLY FLAWED.

US EPA RESPONSE: SEE RESPONSE TO COMMENT B.2.C. ABOVE.

G. COMMENT: SEVERAL SIGNIFICANT INCONSISTENCIES AND ERRORS IN THE COST ANALYSIS FOR ALTERNATIVE 4 WERE CORRECTED AND USING THE UNSUPPORTED SOIL VOLUMES ASSUMED IN THE FS, THE COSTS WERE RECOMPUTED TO BE ABOUT \$55 MILLION RATHER THAN EPA'S ESTIMATE OF \$27 MILLION.

US EPA RESPONSE: US EPA APPRECIATES THE COST ANALYSIS PROVIDED IN THIS REPORT. IN RESPONSE TO THIS COMMENT, US EPA HAS AMENDED ITS COST ESTIMATE FOR ALTERNATIVE 4 FROM \$27 MILLION TO \$37 MILLION. HOWEVER, THE SELECTED REMEDY INCLUDES ELEMENTS NOT INCLUDED IN ALTERNATIVE 4 AND HAS INCLUDED DIFFERENT TREATMENT FOR VOCs IN SOILS AND REINJECTION OF TREATED GROUNDWATER. THE COST ESTIMATE FOR THE ACTUAL SELECTED REMEDY IS \$31,685,000.

H. COMMENT: AVAILABLE DATA SUGGEST THE APPROPRIATE COMBINATION OF TECHNOLOGIES TO REMEDIATE THE SITE IS SOIL VAPOR EXTRACTION IN CONJUNCTION WITH GROUNDWATER COLLECTION AND TREATMENT. IN-SITU STABILIZATION IS APPROPRIATE TO REMEDIATE LIMITED AREAS OF SEMI-VOLATILE AND METALS-CONTAMINATED SOIL. LIMITED AREAS OF PCB-CONTAMINATED SOIL COULD BE EXCAVATED OR STABILIZED. THE ESTIMATED COST OF REMEDIATING THE SITE WITH THE APPROPRIATE COMBINATION OF TECHNOLOGIES IS ABOUT \$19.3 MILLION. THIS COMBINATION OF TECHNOLOGIES WOULD ACHIEVE THE REMEDIATION OBJECTIVES.

US EPA RESPONSE: WITH RESPECT TO SOIL VAPOR EXTRACTION, REFER TO THE RESPONSE TO COMMENT B.1. ABOVE. IN-SITU STABILIZATION WAS SCREENED OUT OF THE FINAL LIST OF ALTERNATIVES BECAUSE, FOR THE CONDITIONS OF THIS SITE, IT DOES NOT REPRESENT PERMANENT TREATMENT OF SEMIVOLATILE OR PCB-CONTAMINATED SOIL, WHEREAS INCINERATION DOES. A MORE COMPLETE EXPLANATION OF THE SCREENING OF IN-SITU STABILIZATION IS INCLUDED IN THE FS REPORT. IT IS NOT CLEAR WHAT IS MEANT BY "PCB-CONTAMINATED SOIL COULD BE EXCAVATED". IF THIS MEANS "EXCAVATED AND INCINERATED", US EPA WOULD AGREE. US EPA BELIEVES THAT INCINERATION OF PCB AND SEMIVOLATILE-CONTAMINATED SOIL IS APPROPRIATE AT THIS SITE, EVEN THOUGH IT IS SOMEWHAT MORE COSTLY. FURTHER DISCUSSION IS INCLUDED IN THE RESPONSE TO COMMENT B.1. ABOVE.

#TA

TABLE 2

COST SUMMARY OF ALTERNATIVES IN PRESENT WORTH DOLLAR

ALTERNATIVES	CAPITAL COST	ANNUAL O&M COST	TOTAL PRESENT WORTH
1. NO ACTION	\$0	\$0	\$0
2. SOURCE CONTAINMENT, GROUNDWATER COLLECTION, AND DISCHARGE TO TRAVIS DITCH	\$6,449,000	\$7,057,000	\$13,506,000
3. IN-SITU STABILIZATION, GROUNDWATER COLLECTION, TREATMENT, REJECTION AND BIOREMEDIATION	\$6,553,000	\$10,013,000	\$16,566,000
4. LIMITED EXCAVATION, INCINERATION, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH	\$22,306,000	\$9,379,000	\$31,685,000
5. LIMITED EXCAVATION, ONSITE LANDFILL, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH	\$28,611,000	\$1,158,000	\$29,769,000
6. EXTENSIVE EXCAVATION, SOIL WASHING, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH	\$73,624,000	\$26,250,000	\$99,874,000
7. EXTENSIVE EXCAVATION, INCINERATION, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH	\$137,449,000	\$8,434,000	\$145,883,000
8. EXTENSIVE EXCAVATION, OFFSITE LANDFILL, GROUNDWATER COLLECTION, TREATMENT AND DISCHARGE TO TRAVIS DITCH	\$149,095,000	\$344,000	\$149,439,000